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LECTURES
ON
COMPARATIVE ANATOMY
AND
ANIMAL PHYSIOLOGY,

DELIVERED BY

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&c., &c.;

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LECTURE XXI.

ON THE OSTEOLOGY OF RUMINATING QUADRUPEDS.

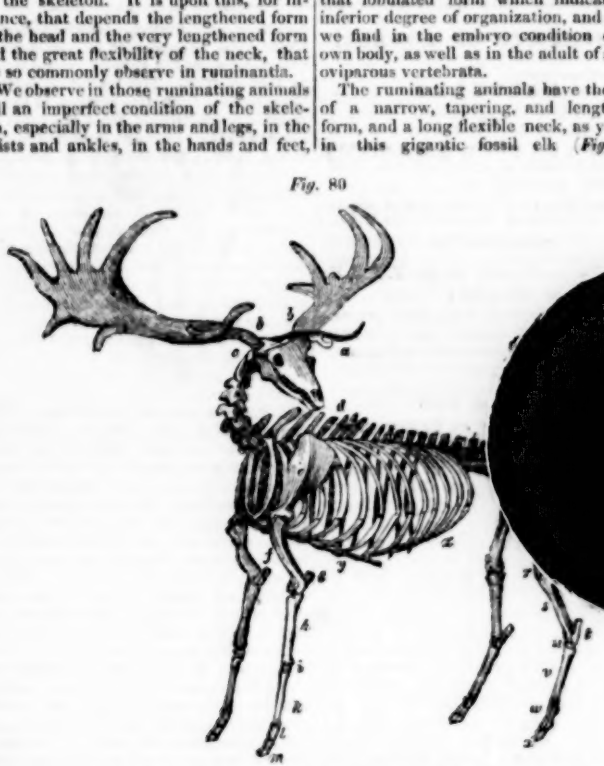
As the organization of all the mammiferous animals belongs to the same typical form in its most essential parts, it may appear indifferent how we place the various groups which compose this class, in examining the several systems of their body. It is obvious, however, that we must take them successively in groups, on account of the striking differences which they present in such secondary systems as the osseous and the muscular, and on account of the high importance of all the details of structure in that class of the animal kingdom to which man belongs, and all the animals most useful and necessary and interesting to him. By examining the skeletons of the orders of quadrupeds in succession, we have an opportunity of considering the peculiarities of isolated forms, at the same time that we survey the typical forms of all the orders of this most diversified class. There is no form of mammalia so remote from the human as that of the cetacea we examined yesterday, with the most imperfect skeleton of all the mammiferous animals, and there are many intermediate forms between that and the human—like orangs and other quadrumana,—which connecting forms come, therefore, to be considered in ascending from the simpler organizations to that of man. The transition may appear sudden from the cetacea to the ruminating quadrupeds, from the great difference in their outward form and in their living habits; but the marked inferiority of organization in the most important parts of these herbivorous quadrupeds, and the imperfect development of their skeleton and of their organs of motion, have, by universal consent, thrown them down nearly to the lowest grade among the mammiferous animals. It is an order of great extent, from the number of species and the varieties of them, but they belong to very few distinct genera, and they are remarkably characterised as a great natural family, isolated from most other forms by the four-fold division of their stomach and their power of rumination. From the vegetable nature of their food, their flesh is tender and palatable, as in the herbivorous species of all other classes of vertebrata, and their disposition has a corresponding mild and tractable character; so that the animals we are now to consider are the most valuable to man in an economical point of view, as affording him his chief means of subsistence, useful beasts of burden, the materials of his clothing and many other articles which conduce to his welfare. By transporting them with him into all climates and all latitudes, and subjecting them to domestication and to an artificial life for innumerable generations, he has tended much to confound their geographical and zoological relations, and materially affected the forms and proportions of their parts, and even the duration of species on the earth. From the numerous remains of these animals found in a fossil state, especially in fissures and breccias, the study of their osteology presents subjects of peculiar interest to the geologist. This is an order which is remarkable for the uniformity of the plan of structure which pervades all the systems of the animals belonging to it. It is thence one of the most natural and best-marked or-

ders of the whole class. It comprehends those quadrupeds which have a complex stomach, consisting of four principal cavities, and which have the power of bringing up the food after having been once swallowed, bolus by bolus, to be masticated in the mouth. All the quadrupeds of this great family are consequently herbivorous animals. The circumstance of their kind of food, and the position in which that food is generally placed, give rise to important modifications in the general form of the skeleton. It is upon this, for instance, that depends the lengthened form of the head and the very lengthened form and the great flexibility of the neck, that we so commonly observe in ruminantia.

We observe in those ruminating animals still an imperfect condition of the skeleton, especially in the arms and legs, in the wrists and ankles, in the hands and feet, in the deficiency of teeth, in the want of clavicles; and it is chiefly from these deficiencies of the skeleton that those animals are placed next to the lowest order of the mammiferous animals—next to the cetacea. This imperfection of the skeleton, however, is accompanied also by inferior conditions of many of the internal organs. The cavity of the cranium is small in the ruminating animals. The brain is but imperfectly developed. The kidneys retain long, and some of them permanently, that lobulated form which indicates an inferior degree of organization, and which we find in the embryo condition of our own body, as well as in the adult of all the oviparous vertebrata.

The ruminating animals have the head of a narrow, tapering, and lengthened form, and a long flexible neck, as you see in this gigantic fossil elk (*Fig.* 80).

Fig. 80



This lengthened form of the head depends upon the great development of the bones of the face, and not on the extensive development of the bones of the skull. The cranial cavity is here remarkably small, and it appears to have been a wise provision of nature to have given an imperfect development to the cerebral mass in the ruminating quadrupeds. The carotid and vertebral arteries are exhausted before they reach the distal extremity of so long a neck, and the development is here chiefly on the surface. They are destined by their instincts and by their structure to convert vegetable into animal matter, and they are destined themselves to be the victims and the prey of higher forms of organization. They are thus more influenced by the seasons, and by external circumstances in their living economy,

than are the more elevated forms of quadrupeds. They form a tribe of beings more governed by blind instincts, and less capable of complex mental operations, than their wily foes. They are, therefore, more easy victims to their foes, by their want of that cunning and that intellectual development which we see so remarkable in many of the carnivorous quadrupeds. Their cerebral centres being less developed, they feel less acutely the pangs which they are doomed to suffer to fulfil the purposes for which they were formed by nature. So that this imperfect development of the interior of the head is the best possible arrangement for animals, serving those purposes in nature. It is a general character of herbivorous animals, as contrasted with carnivorous, that they have an inferior degree of development in their most essential systems. Even in the lowest order of mammalia we were examining yesterday, we saw the enormous development of the cranial cavity in the blood-thirsty dolphins, for example, as contrasted with the small cranial cavity in the dugong, or in the lamantine, ...h feed on marine plants that wave ...ets at the bottom of the ocean. ...stincts to devour their natural ...ithout canine teeth to tear ...s to hold them down, with ...der jaws and feeble mus... ...m, the safety of the rumi... not on boldness or fero... power of flight to escape ...k then to the length and ... slender legs and elastic ...d us of the light members ...sed for the attenuated air, ... see the alarmed deers or ...nding over the rocky cliffs, ...ore like birds on the wing ...drupeds running on all-fours. ...als necessary lengthening of their ...ans of motion, their legs,—to escape from danger and to wade through the long vegetation on which they feed, their neck and head, raised on pillars high above the ground, must be lengthened proportionally, to reach their food on the earth, and to serve as a hand, like the birds, from the limited motions of the joints of their legs. Hence the lengthening of their tail, which often terminates in a long brush to wipe the dust away, or whip the insects from their trunk. It is also from the great preponderance of their external over their internal carotid arteries, as well as from their *retia mirabilia*, on the trunks of the internal carotids, that their head remains uninjured, though hanging down incessantly at the end of a long pendant neck, and the blood thus sent to the superficial parts, develops those remarkable processes and horns from the centres of ossification, or tuberosities of the frontal bones.

The frontal bone, which always supports the horns in ruminating quadrupeds, as you see in this skull of the Virginian deer (*Fig.* 81, *c c*), is divided by a continuation of the sagittal suture, or, rather, the sagittal suture only exists between the two portions of the frontal bone, for behind them the two parietal bones (*Fig.* 81, *e*) form a continuous solid

Fig. 81

arch, by their complete anchylosis on the median plane, and form a solid wall around the greater part of the skull. Were the sagittal suture continued through the parietal bones, as well as through the frontals, the head would be greatly weakened; and, provided with large and heavy horns, developed from protuberances of the frontal bones, the head would be more liable to be split into two, were the two parietals not anchylosed, and thus to form a solid arch over the head behind the horns. The frontal bones are united by a beautiful and deeply serrated suture. The centres of ossification of the frontal bones, the frontal protuberances, shoot out, in most of the males of those ruminating quadrupeds, elevated processes; those processes sometimes are covered with horny sheaths, which are permanent, and composed of an elastic horny extravascular substance. At other times those frontal tuberosities shoot up solid osseous organised antlers, which are periodically formed and cast off. The permanent horns cover an elevated permanent projection on each of the frontal bones, of a cancellated internal structure; but the deciduous horns, which belong to the deers (*Fig.* 80, *b b*), are continuous with the frontal bone itself, organised and grow

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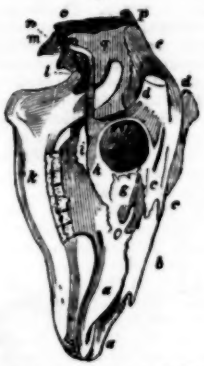
Fig. 81



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ing like that bone, consolidated by the same earthy materials, but with a larger proportion of animal matter, and with a softer internal core passing through all the branches.

In consequence of the small development of the cranial cavity, and of the brain within it, the internal carotid artery passes smaller into the interior of the head, and the external carotid artery receives the greatest proportion of the blood sent to the head. It is sent over the fore part of the head, and over the sides of the head, by the large branches of the temporal artery. The frontal bones are here, therefore, largely supplied with bloodvessels, the great sources of nutrition and development. Those branches of the temporal artery shoot upwards, you observe, and cover, by their numerous ramifications, the whole exterior of the large antlers upon each side, and during their growing state they are highly sensible, soft, warm, vascular, and covered, as the other bones, by the hairy skin.

For a considerable time during the growth of this projecting portion of the frontal bone, we find that a large portion of the blood circulating in the system is thus employed in the development of a part that is afterwards to be lost. When this portion has been completely formed, covered with the ordinary integuments, highly organised, and has become completely consolidated, we observe that the deposition of ossific matter takes place to a much greater extent around the base of the antler. So much indeed is thrown out around the trunks of the arteries which supplied its exterior, that those trunks are gradually pressed upon, obliterated, and the nutritious fluid is thus cut off from the whole of the antler as effectually as if the vessels were tied by a ligature. The antler then becomes a dead portion attached to the living frontal bone. It remains thus during the winter season, and until the heat of spring, when the blood is sent in larger quantity to the head, and from the small development of the brain and interior of the head, the blood is sent chiefly to the exterior parts, and in large quantity to the frontal bone. This part thus becoming highly sensible and vascular, begins to undermine the dead antler by the absorption of the living bone at its base, as the dead bone is removed by the absorption of the living in cases of necrosis in the human body. It is thus completely undermined, and by coming against the branch of a tree, or sustaining any slight agitation of the head, those antlers fall to the ground. A fresh bleeding wound is left over the frontal protuberance on each side. The integuments soon close over that bleeding wound. The processes continue to grow and to extend, still covered with the integuments, highly sensible, vascular, soft, and cartilaginous, and gradually they project their successive branches upon a larger scale, and more numerous in each succeeding year. So that we find those antlers thus serving as a diverticulum to a considerable quantity of blood at stated seasons of the year. The horns of the deers are thus renewed every summer, when the skin which covered the growing horns dries, and falls off in ragged fragments. They are thus too intimately connected in their growth and casting, with the generation of the species in the deer tribes. Indeed, castrating the animal at an early period of life, prevents their development; and if the animal be castrated when the horns are developed, they will not be cast, but remain permanent. It is extraordinary, in a physiological point of view, to observe in these animals the immense quantity of phosphate of lime which is often thus periodically secreted from the blood, and periodically thrown off. In the fossil elk of the Isle of Man (*Fig.* 80, *b b*), there appears to have been as much osseous matter in the huge palmated antlers as in the whole of the rest of the skeleton taken together. So that we may suppose that that animal regularly formed every year as much ossific matter as that composing the whole internal skeleton of the body. When the new horns are completely formed, and the skin drops from their surface, the blood excluded from them is directed to the genital organs, and the intercourse of the species takes place.

The permanent horns of ruminantia are formed by successive hollow cones of a horny substance, placed within each other, and sheathing a highly cancellated protuberance of each frontal bone. Those permanent cones thus cover a projection in precisely the same region of the frontal bone as that occupied by the deciduous antlers. By the successive formation of new horny matter from the base, as in the growth of hairs, claws, and other epidermic parts, within the old, we can trace a kind of analogy betwixt the phenomena of the development of these permanent horns and the successive formation of the deciduous antlers of the deers. In the one case the gradually superadded matter is continued in connexion with the old, like the layers of the shells of mollusca; but in the case of the antlers it is altogether removed from the system, like the deciduous shells of crustacea. It is quite necessary it should be entirely removed from the system in the case of the antlers, because having once acquired their perfect form, they possess no means of growing and

keeping proportionate with the rest of the head and skeleton; they become consolidated and dead, their circulating fluids being cut off. Not having the means of growing, they would not fulfil the same purposes in the adult animal for which they were designed, were they to remain in their youthful diminutive form. It is, therefore, necessary that they shall be periodically thrown off, and that each succeeding pair shall correspond in dimensions and form with the wants of the animal at all those successive periods. The permanent soft horns are gradually pushed from the protuberances by the growth of the new parts at the base; so that we may look upon those permanent fibrous sheathing horns as analogous to a series of successive deciduous antlers, by the successive additions made to their base during the whole life of the animal, the primitive young horn being the small-pointed apex in the adult horn.

We observe a considerable difference in the forms presented by the frontal bones in different ruminantia. Some, as this four-horned antelope from India, the head of which I hold in my hand, have four protuberances, all from the long frontal bones, and these covered with a horny substance, forming four pointed sheaths. Mostly there are, however, only two such frontal protuberances, the centres of ossification in the young bones, covered with a permanent horny sheath; as is the case with the antelopes, oxen, sheep, and goats. The deer tribe, as we have seen, have the frontal protuberances, with deciduous osseous developed masses. The male and female of the giraffe have two lateral permanent protuberances, which are covered with skin, and terminate in tufts of black hair, which are intermediate in their character between the horny sheaths of the one tribe and those deciduous horns of the deer; in fact, you may look upon the two lateral prominences of the frontal bone of the giraffe, as the imperfectly developed and still growing horns of the deer; they are covered not only permanently with integuments, as the deer's horns are when they continue to shoot, but they are frequently covered with a tuft of hair, showing the direction of development, the development having a tendency to proceed in that direction. But how can the carotids develop perfect antlers at the extremity of so long a perpendicular tapering neck? They can develop only the stumps of antlers and tufts of hair. The giraffes form an anomalous group in this order, for we observe, also, that besides those two lateral permanent prominences, which are sometimes isolated by sutures, they have, developed upon the median plane, an elevated tuberosity analogous to that which supports the frontal or posterior horn of the two-horned rhinoceros. The camels, the dromedaries, the lamas, the musk-deers, and the females of most genera of ruminantia, are entirely destitute of these organs of defence developed from the frontal bones, and, what is curious, the genera which I have mentioned as without horns are provided with canine teeth, so rare among the animals of this order. These remarkable organs on the frontals require the interfrontal suture to check the spreading of percussions to which they are so incessantly exposed. They are interesting parts in a physiological point of view, from their relations to the genital system, and from the powers of regeneration which they naturally display. They are important parts for the zoological classification of these animals, and the constant, obvious, and useful characters which they afford. They are interesting objects to the geologist, in enabling him to decipher and distinguish the extinct species so abundant in alluvial formations, and it is important for him to become acquainted with the various forms which the horns of the same species present during the successive years of the animal's advance to maturity, the plan of their formation being the same in each species, although that plan is only perfected at maturity, after numerous approaches during the whole preceding period of life.

The great development of the frontal bones separates the orbits to a distance from each other, and the large prominent eyes of the ruminantia are directed laterally. The orbits communicate with the temporal fosse, but they have a complete circle of bone by the development downwards of the zygomatic or molar process of the frontal bone, and by the development upwards of the zygomatic bone itself. We observe that the great development of the face in these animals is effected by the ordinary bones of the face, and by the introduction and extension forwards of a bone which in the highest mammalia is confined to the orbit—the lachrymal bone (*Fig.* 81, *g*; *Fig.* 82, *e e*), which extends down along the side of the nose. The superior jaw-bones are of considerable length and of great depth to give insertion and the means of growth to a considerable number of large and deep molar teeth. The nasal bones (*Fig.* 81, *b*; *Fig.* 82, *f f*) are both long and broad, and cover a large nasal cavity and an extensive and acute organ of smell. The turbinated bones are of considerable size in those ruminating animals, and in herbivorous animals generally, and corre

with the great length of the face and of the nasal cavities. The organ of smell in the short-headed carnivorous quadrupeds, owes its development more to the numerous turbinated cells of the ethmoid bone. The frontal sinuses are of great magnitude, especially in those species which have large permanent horns, in which they extend over all the upper part of the head.

In the intermaxillary bones (*Fig.* 82, *h h*) we observe generally in ruminating animals, that there are no teeth. This is the case with the deers, with the antelopes, with the oxen, with sheep, and with goats. It is the case with the giraffe, with the buffalo, and most of the ordinary ruminantia. But there is a beautiful gradation in the structure of these bones, from the solidungulous pachyderma, where there are both incisors and canine teeth above, through the camels, and dromedaries, and lamas, and musk deers, where they also exist in the upper part of the mouth, to the typical form in the lower ruminantia, where there are neither incisors nor canine teeth above. In ruminating quadrupeds, the intermaxillary bones, for the most part destitute of teeth, form the anterior termination of the face, and are covered below with a firm cartilaginous lining. They are thin, depressed, expanded laterally, and the cartilaginous substance which covers them is the part against which the tongue presses the grass. In the camels we observe in each intermaxillary bone one incisor tooth. Behind those incisor teeth, one upon each side, we observe a canine tooth. Those canine teeth are also very rare in ruminating quadrupeds. We see them in the musk-deer forming large tusks: we observe them in the dromedary, in the camels, in the lamas, and in the pacas. In the inferior ruminantia there are most generally no canine teeth either above or below. The molar teeth of ruminating quadrupeds have the plates of enamel directed longitudinally; they traverse the teeth in a longitudinal direction, alternating with layers of osseous substance, and in a variable number of plates. In the upper jaw, the oblique direction of the crown of these molar teeth is upwards and inwards; the direction in the lower jaw is downwards and outwards. This direction relates to the kind of lateral and oblique motion of which the lower jaw admits, and the kind of motion which the animal employs in the act of ruminating. Upon this also depends the exterior convexity of the layers of the molar teeth in the lower jaw, and the interior convexity of those of the upper jaw.

We have thus three kinds of teeth distinctly developed in many of the ruminantia. In the cetacea we scarcely find a fixed dental formula, especially among the blowing cetacea. We have seen that their teeth have the same form from the anterior to the posterior part of the jaws.

It is of great importance in the study of quadrupeds to attend to the form, the growth, and all the characters that relate to the teeth. Teeth which are implanted in the intermaxillary bones are termed *incisor* teeth, and those opposed to them in the lower jaw go by the same name. The teeth which come next to the incisors, both above and below, when there is not a considerable vacant space, are called *canine* teeth. All the teeth which follow behind the canine in both jaws are called *molar* teeth. These are the names of the teeth of animals employed by zoologists. The form of the teeth has nothing to do with the names assigned to them which I have mentioned, for we shall find that often the incisor teeth placed in the intermaxillary bones are much larger than the canine teeth, and that the canine teeth may be the smallest in the jaws. The teeth, from being so intimately related to the kind of food and living habits, form the most important parts connected with the skeleton of quadrupeds, for determining the true characters and nature of the remains that are left us in the strata of the earth, of the innumerable generations of quadrupeds that have formerly existed, although these teeth are, in fact, only cutaneous developments, like the claws or hoofs of the feet.

There are two canine teeth above, and two canine below, in the camel, as in the male of the solidungulous pachyderma. Behind those canine teeth, and quite isolated, there are small teeth, shaped like canine teeth, in the camel, of a conical form, two in number in each jaw, and separated both from the canine teeth and the molar teeth; these and similar molar teeth for the most part are called *false* molares, both above and below. Then there succeed five true molar teeth. All these are expressed in an abridged dental formula by the zoologist, which saves a considerable deal of description in giving the distinctive characters of quadrupeds.

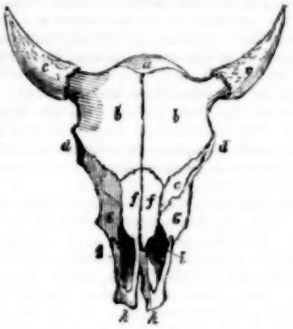
The alternate plates of enamel and osseous substance of the teeth in the ruminating animals, are directed longitudinally along the crowns of the teeth; that corresponds with the lateral motion of the lower jaw; and we shall find that where the plates of enamel are thus disposed alternately with osseous substance in the structure of the teeth, those plates of enamel are placed almost always at right angles to the direction of the mo-

tion of the lower jaw. The direction of the plates of enamel, therefore, would indicate to you the direction of the motion of the jaw to which such teeth belonged. Here the longitudinal direction indicates that the lower jaw moved laterally. Here then they were obviously placed at right angles to the direction of the motion which is required in order to bring the two rough surfaces over each other transversely to grind the vegetable food. There are other quadrupeds, as the *rodentia*, which have the contrary motion of the teeth and jaws—which move the lower jaw backwards and forwards in a longitudinal direction, sliding in a horizontal plane. Those quadrupeds have plates of enamel alternating with osseous substance, as the ruminantia, but the direction of the plates is transverse, or directly opposed to the former. They are, in the rodent quadrupeds, directed transversely across the crown of the tooth, which is still at right angles to the direction of the motion of the lower jaw in that order of mammalia.

Carnivorous quadrupeds have teeth of a very different character. Their teeth do not meet by flat surfaces, like those grinding teeth I have been speaking of in the ruminantia and rodentia. The teeth of carnivorous quadrupeds are covered with a continuous layer of very dense enamel, and they cross each other like the blades of a pair of scissors, or like two knives when the jaws are closed. They cut off thus the masses of flesh on which they are to feed, and do not grind it, either by a lateral or longitudinal motion, but sometimes further cut it by a perpendicular or vertical motion of the lower jaw. They are entirely covered with enamel, and have sharp acuminated crowns directed longitudinally. These forms of the crowns of the molar teeth must have the condyle of the lower jaw, and the glenoid cavity of the temporal bone, precisely formed for the kind of motion suited to the teeth, so that the form of the one indicates that of the other. The condyle is transverse, and securely locked in a transverse deep glenoid cavity in the *carnivora*. It is longitudinal, for the longitudinal gliding motion of the lower jaw, in the *rodentia*.

In the ruminantia the extensive lateral and oblique motion of the lower jaw requires the condyle to be flat, and to play on an extensive, flat, glenoid surface; and the coronoid process (*Fig.* 81, *q*) of the lower jaw is very long, and extended far through the very small zygomatic arch, so that dislocation of the jaw by this lateral extensive motion is effectually provided against by this structure. The great breadth of the forehead in many of the more heavy forms of ruminantia, as in this American bison (*Fig.* 82), and many of our domestic cattle with permanent horns, is

Fig. 82



produced chiefly by the large air-cells between the two tables of the skull, the frontal sinuses which open into the nose, and extend into the cancellated core of the horns (*Fig.* 82, *e e*) continued from the two frontal bones (*Fig.* 82, *b b*). The zygomatic arch is remarkably slender, as little power of the masseter muscles is required to masticate the pulpy bolus brought up from the second stomach to the mouth in the act of rumination. By the extension laterally of the orbits, so remarkable in the camels, these timid and watchful animals have, while their long head prunes the turf, a very wide range of vision; their visual impressions being conveyed through one eye at a time, are, however, much less distinct than where the eyes are approximated, and directed both to the same object at once.

The feeble and defenceless quadrupeds of this order are generally gregarious, and endowed with watchful instincts; they are generally provided with the means of escape by flight from their more powerful and cunning foes. Their means of escape are their power of bounding with rapidity over the plains. Thus in general the deers and the antelopes have a slender and lengthened body, and the extremities have the bones slender and lengthened, provided with muscles of considerable power, with long tendons for their rapid motions. These circumstances we find to influence considerably the forms of the skeletons in the ruminating animals.

You observe in the deer tribe (*Fig.* 80), as in the specimens before you, that the neck is long and flexible in every direction, and that the cervical vertebræ (*Fig.* 80, *c*) have a lengthened and almost cylindrical

form; that their spinous and transverse processes are so slightly developed as to be no impediment to the circular rotation of the neck. You see the same thing in the antelopes, as in this African gnu. The number of cervical vertebræ is the same in all the ruminantia as in almost all the mammalia—the same as in the human neck seven. It is the same, indeed, from the loftiest of all quadrupeds, the giraffe, down to the smallest of the mammalia—down to the little shrews. In the long neck of the giraffe the seven cervical vertebræ are like long narrow cylindrical tubes, to allow of the freest motion on each other in every direction.

In consequence of the weight given to the head by the antlers in one tribe of these animals, and the large massive horns which we find in many of the others, as this huge buffalo of India, it is necessary that there should be the means of supporting so enormous a weight. From the use which is made of those instruments of defence, we see that it is necessary to provide the head with more than merely the means of supporting the weight, for they must be used often against great resistance. The insertion solely of muscles for the motions and the support of so large a weight, would be exceedingly inconvenient in consequence of the great muscular development which would be required for such a purpose, and which would of itself increase the great weight. It is on this account, therefore, that we observe the dorsal vertebræ in the ruminantia to have the spinous processes (*Fig.* 80, *d*) very much lengthened, and the transverse ridge of the occipital bone much elevated. Along the extreme points of those processes of the dorsal vertebræ the ligamentum nuchæ extends from the occipital bone, frequently also along spinous processes of the lumbar vertebræ, along the sacral vertebræ, and even to the coccygeal vertebræ, touching the spinous processes of all those vertebræ. By the elasticity and flexibility of that strong ligament, the head of those long-necked animals is not only kept in a state of rest without muscular exertion, but is actually raised from the ground to a slight degree, when the head has been forced to descend to the ground for food. Being then upon the stretch, there is a tendency in this ligament to recover its natural state of relaxation from that state of extension into which it is forced. This applies also to the large pachyderma, from which there is a natural transition to the skeleton of the ruminating animals, and where we find the head frequently provided with heavy instruments of offence and defence. The transverse processes of the lumbar vertebræ are here both long and strong, for the muscles which enclose their large abdominal cavity.

The sacro-iliac articulation (*Fig.* 80, *s*) in the ruminantia varies a little in its degree of inclination, according to the heaviness or lightness of the trunk, and the elasticity it requires. In those which are destined to move with velocity over the plains, the obliquity from the perpendicular is greatest, to give elasticity to the limbs; but that articulation is more vertical, in proportion to the weight of the trunk, and the massive character of the whole skeleton. We find that this sacro-iliac articulation thus becomes more and more approached to the perpendicular, as the weight of the whole trunk increases. It must appear obvious to you, from the position and the direction of this articulation (*Fig.* 80, *s*), that it is feeblest and most liable to motion, when it is most turned from the perpendicular, as in the light skeletons of the deers. The cotyloid cavity, for the reception of the head of the femur, is then thrown considerably backwards behind that part by which the whole pelvic circle is attached to the vertebral column. There is a degree of motion, therefore, in this region, which adds to the elasticity of the movements of these nimble animals, and which tends to break the impulse given to the body in its bounding from rock to rock when pursued among the cliffs. Consequently, in the carnivorous animals, which possess also great nimbleness and lightness of motion, we find this obliquity to be considerable, to break the impulse of their leaps. But the most perpendicular sacro-iliac articulation of all is in the massive pillars of the elephant which we see passing in straight lines from the feet up to the sides of the sacrum, or to the vertebral column, reaching perpendicularly to the cotyloid cavity from the ground. The pelvis is here in the elephant directed perpendicularly downwards, so that there is a continued vertical line from the sacro-iliac articulation, and from the cotyloid cavity to the ground on which these strong pillars rest. It is obvious that there is greatest strength given to the attachment of the trunk when the pelvis is directed the most perpendicularly, and, therefore, in the most massive forms, this perpendicular direction of the pelvis is observed. It is feeblest where it is most oblique in the lightest skeletons. In consequence of this obliquity of the pelvis, the sacrum is generally of great length, to arch over and protect that cavity above.

The coccygeal vertebræ (*Fig.* 80, *c*) are generally numerous, and the whole of that region is strong, muscular, and flexible, in ruminating quadrupeds. This appears to be

connected with the very limited extent of the motions of their extremities, in which security and not extent of motion is provided for. We see many animals employing their extremities for removing sources of irritation from the surface of their body, for cleaning that surface in various modes, and for various other manipulations; but in the ruminating quadrupeds, we observe a remarkable character in the articulations of the extremities, by the limited extent of motion which the joints admit of. There is great velocity of motion in the extremities often, but that velocity is accompanied by a limited extent, and, consequently, great security, in the joints. They remind us of the ginglymoid joints, which we saw in crabs and other crustaceous animals, which could move only in one direction. Now it appears connected with this circumstance, that we find in many of those animals not only that the coccygeal vertebræ are numerous, and admit of very free motion, but that they are provided with a brush at the extremity of the tail, with which to sweep away sources of irritation. The neck is lengthened, the head is lengthened, and the tongue serves also for the same purpose as a hand, cleaning and removing sources of irritation. The horns are frequently employed for the same purposes, because the fixed condition of the arms renders them useless for such purposes.

In the neck of the giraffe, and in the whole vertebral column of that animal, we perceive a beautiful adaptation to its living habits. Destined to inhabit the wooded plains in the interior and most secluded parts of Africa, and to prune the foliage from the summits of lofty trees, we see that it is built up, like a straight pillar, to stand upon a comparatively narrow base, and that the neck is raised up perpendicularly above the anterior extremities. Its legs and neck, long and slender, and mottled with brown spots, look like the stems of the trees which it prunes, and it is thus concealed. You see in large quadrupeds that the vertebral column is generally placed in a horizontal plain, and the four extremities of the body, the anterior and posterior pairs of extremities, placed at a convenient distance from each other, to serve as four pillars of support to the horizontal trunk; but the neck being much lengthened in the giraffe, to reach its food, and being supported by the usual apparatus of muscles and other soft parts, it presents considerable weight, which, were the vertebral column not so inclined downwards from the anterior to the posterior extremities, would be thrown altogether upon the arms. By an obliquity, however, downwards, from the region of the shoulders to the region of the pelvis, and by the close approximation of its arms and legs, a considerable part of the weight of the whole anterior part of the body is thrown upon the pelvis. It is on this account also that the animal carries its long neck so perpendicularly, and that the posterior extremities of the giraffe are so closely applied to the anterior, to share in their burden, by which arrangement the trunk of the body is thus so much shortened. Were the head of the giraffe to be at all proportioned in its weight to the great magnitude of the body, it would have been impossible for it to be supported upon the extremity of so long a neck. When it changed its position from the vertical plane, it would have fallen to the ground. The skull of the giraffe, therefore, we find to be extraordinary among quadrupeds for smallness. It is sufficiently large for its object—to support the organs of the senses, and to serve as an instrument in pruning the foliage from the tops of the trees, which it collects by means of its very long, narrow, and flexible tongue, cropping off the leaves of the branches, and feeding upon them.

The thorax of ruminating quadrupeds we generally observe to be much compressed at its interior part, and the anterior pairs of ribs are almost straight. It presents that carinated appearance which is most remarkable in the skeleton of the giraffe, and the cavity of the thorax is less throughout this order than in most others. By the compression of the anterior part of the thorax, and the carinated appearance which it there presents, the anterior extremities, the heads of the two *humeri*, are allowed to approach each other more nearly, and thus to come more immediately under the centre of gravity of the trunk. They are firmly fixed in that position, not by a clavicle, but by the powerful muscles, and by the ligaments, and also by a cartilaginous substance. There is thus no clavicle in any ruminating quadrupeds nor in the pachyderma. The interposition of that bone would have thrown out the arms from under the axis of the heavy trunk. The respiratory organs of the ruminantia are less exerted and less required than in the carnivorous quadrupeds, and are generally but imperfectly developed, and the thoracic region is thus comparatively small; so that this portion of the trunk of the body, which is enclosed by the ribs, is not entirely a thoracic region. Those ribs, extending sometimes to near the pelvis, protect the enormously developed intestines, the length and capacity of which are so characteristic of this herbivorous order. Feeding upon vegetable substances, which contain com-

paratively little nourishment in a given bulk of matter, they require to take a large portion of that kind of food, to retain it for a length of time in the body, that all the nutritious substance may have leisure to be prepared and extracted therefrom. They require a lengthened, capacious, intestinal canal, numerous cavities of the stomach, and a large cæcum of the colon. This requires a large abdomen, which extends far forwards upon the part of the trunk enclosed by ribs, and the portion of the trunk for containing the lungs is but small.

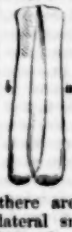
In the ruminating quadrupeds the sternum (Fig. 80, *y*) is much more developed longitudinally than we saw yesterday in the cetacea. The pieces which compose the sternum, or which constitute the elements of that bone, are here exactly placed in one longitudinal row. Those pieces are sometimes much compressed laterally; seldom compressed from before backwards, as they are in man; but they are placed in a different order with relation to each other from what we saw in most oviparous classes of vertebrata, where they were ranged around the entosternal piece; here they are ranged in a single row; that is the best position in which to place the elements of the sternum in the lengthened cylindrical horizontal trunks of quadrupeds. The scapulæ (Fig. 80, *e*) of the ruminating quadrupeds are remarkable for their narrow lengthened form, and for the smallness of their posterior or vertebral margin. Their processes are all very short and small,—the coracoid process and acromion are always remarkably small. By the lengthened and narrow form of the scapulæ the *infra* and *supra-spinati* muscles have greater length, and a higher fixed point, and by their action upon the humerus and their lengthened form, they cause that bone to move through a proportionally greater space in a given time. They thus give increased velocity when they are actually weakened by the increased length and narrow space afforded them on these long narrow scapulæ of the swift-moving ruminatia.

The humerus (*Fig.* 80, *f*) is here a very short bone; so is the femur (*Fig.* 80, *g*) in the ruminating quadrupeds, and the whole of the bones of their extremities are disposed in a zig-zag direction, to prevent percussions extending to the trunk, and to give a great degree of elasticity to the limbs, for rapid flight. The radius and the ulna present articulations at both extremities, which admit of the most limited extent of motion, and allow of no pronation and supination in either hands or feet. The ulna is generally fixed or anchylosed at its distal extremity to the radius, and but very imperfectly developed. The olecranon (*Fig.* 80, *g*), however, a part which you perceive so important in giving attachment to the extensor muscles and security to the articulation, which is chiefly provided for in the joints of ruminantia, is of great magnitude and length. Thus we observe that the radius in disappearing from the forearm of animals, is gradually lost from its distal extremity upwards, and not from its proximal extremity downwards. It is the ordinary mode of the disappearance of the parts of the skeleton. The modifications first introduced, and manifested in the greatest extent, are in the parts most distant from the centre of the skeleton, or the middle of the vertebral column.

At the extremity of the radius we observe generally that the four usual small carpal bones (*Fig.* 83, *a*) in the first row and the four of the second row are generally anchylosed into two bones which connect the upper row with the metacarpal bones (*Fig.* 83, *c b*), which are remarkably lengthened. The metacarpal bones, which at first were four in number in most of the ruminantia, disappear, excepting the canon-bone, as you see in the hand of the deer (*Fig.* 83, *c b*), which is left composed of two portions, anchylosed, and there are often two small metacarpal bones found, one at each side of the great canon-bone—that anchylosed compound metacarpal or canon-bone in the forearm; and you observe the same appearance in the posterior extremities also, in the metatarsal bones of the feet, which, as well as the metacarpal bones, consisted originally of two entirely separate bones (*Fig.* 84, *a b*); and indeed you can see distinctly upon these adult skeletons of the deers and antelopes before you, that there is still an obvious groove upon the anterior, and a deep groove upon the posterior, part of the canon-bones, marking the original separation of those two bones. These two pieces of the metacarpal and metatarsal bones early anchylose, and their partition is absorbed. Although there are, besides the canon-bones, two lateral small metacarpal and metatarsal bones in many of the ruminantia, they are seldom preserved in the skeletons, being only slender spiculæ, one on each side of the canon-bones. This anchylosis of the bones of the extremities has not proceeded downwards, in the ruminatia, below the extremity of the metacarpal and metatarsal bones, and two series of three pha-

Fig. 83

Fig. 84



langes in each are continued separately to the ground, and generally two more toes on all the feet, one on the outer and one on the inner part of each foot, are seen in an imperfectly developed condition. Those two toes prolonged to the ground you observe, both on the anterior and posterior extremities, to consist each of three phalanges, which are attached to pulley-like articulations at the end of the canon-bones. In the solidungulous quadrupeds this anchylosis, however, continues downwards through the feet, beyond the extremity of the metacarpal and metatarsal bones, and reaches even the extreme points of the toes; so that we have in the zebra, the quagga, and other *solidungula*, an appearance of a single toe upon their anterior and posterior extremities. This single toe we observe, therefore, to be composed of the ring finger and the middle finger anchylosed together, and consisting in those animals of the same three anchylosed phalanges which you observe detached in ruminating quadrupeds.

In the posterior extremities the femur (*Fig.* 80, *q*), as I have mentioned, is a short and strong bone, with a remarkably large and elevated *trochanter major*, the tibia (*Fig.* 80, *s*), receiving the whole of the articulations with the femur and the astragalus, the rudimentary fibula existing only as a slender splint bone in this order. The calcaneum (*Fig.* 80, *t*), like the acromium of the ulna, is very long and large, and is very prominent, to aid in the quick motions of the posterior extremities, serving for the attachment of that powerful extensor tendon of the heel joint, the *tendo-achillis*. There are fewer bones, generally, in the tarsus (*Fig.* 85, *b*) in ruminating animals, as you observe in the deer's foot (*Fig.* 85), than we find in the pachyderma, or in any other order of mammalia. There are five bones in the tarsus, two cuneiform and a compound, or *cubo-scaphoid* bone, besides the astragalus and calcaneum. There is, however, one more in the camel's tarsus than in the other ruminantia; and in this respect, as in many other parts of its skeleton, the camel approaches remarkably to the solidungulous pachyderma. The metatarsal bone (*Fig.* 86, *c d*), or the canon-bone of the posterior extremities, is formed like that of the arm, but proportionally much more narrow transversely;—that of the arm is much broader. The metatarsal bone is articulated below, by its two prominent pulley-like articulations (*Fig.* 85, *e f*), to the two first phalanges of the two toes of the foot. Those pulley-like articulations indicate the limited variety of motion which is permitted in this as in every other region of the foot; the great security, at the same time, of these articulations,—flexion and extension, are very freely performed, but no rotation which would enfeeble the foot and endanger the life of these animals. Those articulations are seen extending, of the same pulley-like form, through the succeeding phalanges; the last tapers to a point, as on the hand, and is covered by the hoof. From observing that the inner toe on the hind foot, and the thumb on the anterior extremity, are the members which quickest disappear, we are led to perceive, that the four toes which exist more or less developed both before and behind in the ruminantia, are analogous to the four outer or ulnar fingers, and the four outer or fibular toes of the foot; and that when there are thus formed on the outer and inner side very small rudimentary toes, one on each side, and two larger toes in the middle, which continue to the ground in these cloven-hoofed ruminantia, those two toes in the middle on the anterior extremities, must be those corresponding with the ring finger and the middle finger of the human hand; and they are the corresponding toes of the foot which reach the ground.

There is a great advantage in this very lengthened form and subdivision of all the feet in the ruminantia, and the zig-zag form of their legs serves for velocity and elasticity during their rapid movements. What they lose in strength by this division of the foot into two toes, they gain by their greater flexibility, and the greater extent of base which they acquire by their separating a little from each other during progression. It gives greater elasticity to all their movements, both assisting in their rapid progressive motion, and in diminishing the impulse communicated to their heavy trunks and their contained viscera, during their rapid boundings and leapings over rivers and over rocks, to escape from the huntsman or the tiger.

Fig. 85

STIMULANT TREATMENT OF PURULENT OPHTHALMIA.

To the Editor of THE LANCET.

SIR,—Some time since you did me the honour to insert in your valuable Journal a case or two, with some accompanying remarks on the treatment, of purulent ophthalmia. I now forward to you two more cases in illustration of the stimulant

mode of treatment, and I hope you will deem them sufficiently interesting for publication. I am, Sir, your most obedient servant,

JOHN WALKER.

Eye Institution, Manchester,
Jan. 23rd, 1834.

CASE 1.—George Johnson, ætat. 27, butcher, admitted into the Manchester Eye Institution July 10th, 1833, was attacked, fourteen days since, with puriform discharge from the right eye, the disease commencing in the left on the following day. He experienced great heat and swelling, with considerable pain, and observed very little difference in the state of either eye after the first day or two. He has not seen anything since the second day of the attack, the lids being so greatly swollen. He applied to a medical man within the first two or three days, who ordered *five leeches* to the right eye, a fomentation of poppies and camomiles, and some purgatives, with bread-and-milk poultices, and a lotion. This was all that was done for him in the way of treatment. The pain was so violent for the first week, as to prevent sleep, but is now somewhat abated, although he cannot yet sleep long at a time. The puriform discharge has not been so copious during the last few days. He is now unable to see any object, but can discern light. There is still considerable swelling of the palpebræ, externally: the conjunctiva is extremely vascular, and is elevated above the cornea, and there is chemosis, and the corneæ of both eyes are *perfectly opaque throughout*, and of a sloughy aspect. He thinks that he caught cold from sleeping in a damp bed a few days previous to the attack, and says that he had some discharge from the urethra.

This poor man, after he had lost the sight of both eyes, and spent all his money, was then sent to Manchester for further advice, when the *argentum nitratum* was applied freely to the surface of the conjunctiva, and a solution of *Sulphate of Copper* was ordered to be used as a lotion, with an occasional purgative.

July 11. Discharge less. Applied the nitrate twice to-day.

12. Symptoms more favourable; the pain, swelling, and discharge, diminished; the corner of the left eye clearer; can discern more light. The nitrate was applied this morning. In the afternoon, at the recommendation of Mr. Windsor, six leeches were applied to each eye, and a blister to the nape of the neck.

13. Same as yesterday. Rep. *Argent. Nit.*

14. The corner of the left eye becoming clearer; he can now discern his finger when held before this eye. Rep. *Argent. Nit.*

21. He can now, with the left eye, discern persons moving around him, when in a weak light. The right eye is better also; he can discern light with it. The nitrate has been applied every day to both eyes since the last report.

Aug. 3. Progressively improving. The eyelids are still vascular, but the swelling has subsided. The cornea of the left eye is clear, except at the upper part, where a fold of the conjunctiva has become adherent, forming a regular pterygium, which was this day excised, as also was a much larger one from the cornea of the right eye. Has been able to walk about the streets during the last week, his vision being so much improved.

It is needless to detail further the progress of this case. Suffice it to say, that at the end of the month he left the institution with very fair vision. A degree of central opacity of the corneæ still remained, but not more than frequently continues after slight attacks of disease of the eye.

CASE 2. —— Bland, aged one month, was brought to me June 28, 1833. The infant was attacked with purulent ophthalmia, when two or three days old. The surgeon had ordered leeches, eye lotions, &c., without being able to check the progress of the complaint. The left eye is collapsed, the humours having been evacuated. The right eye has an ulcer of some size on the cornea, between its inner margin and the pupil, and which seems very likely to perforate the anterior chamber. There is a thick puriform discharge constantly escaping from both eyes, and the eyelids are much tumefied and very vascular. The *Argent. Nitrat.* was applied to each eye, upon the conjunctiva of both lids, touching also the ulcer of the right. *Lotio Cupri. Pulv. Purgans.*

29. Discharge somewhat less; tumefaction less. Apply *Arg. Nit.*

July 10. Gradual improvement each day. For the last two or three days the infant has opened both eyes in a moderate light. The puriform discharge has nearly ceased. Apply *Argent. Nit.* every other day.

19. The ulcer has quite healed, leaving scarcely any opacity, so that the right eye is now perfectly sound. The left has ceased to be an object of attention, being irrecoverably lost, but quite free from irritation.

Remarks.—From the great want of success attending the ordinary treatment of purulent ophthalmia, one would infer that

it still remains vague and unsatisfactory. Practitioners appear to be yet unable to make up their minds on the stimulant treatment. In the mean time, unluckily, their patients are the sufferers, the organ of vision in this formidable affection becoming lost before the surgeon sees his way clearly before him, bewildered by the opposing directions laid down for his guidance. In many instances, it is to be feared, a less plausible excuse must be given for the lamentable want of attention bestowed on many of these unfortunate cases.*

Of all the various inflammatory diseases to which the eye is subject, there is none so frequently followed by total loss of vision as the one in question. The unhappy victims meet us at every corner of our streets,—our asylums for the blind are crowded with them, every public hospital in the kingdom is constantly turning out upon society helpless objects who have fallen a prey to this destructive malady, the misery and wretchedness of whose situation are but too notorious. Indeed, it may be safely asserted, that more persons become blind from this disease than any other, and perhaps than all others combined. The number of children every year disfigured, and rendered a source of unhappiness to their friends, must be prodigious. If we had the means of presenting them to the world in round numbers, the statement I am sure would be appalling.

To arouse the attention of practitioners, then, to the subject of a disease which entails such disastrous consequences, can scarcely be deemed superfluous. The treatment laid down in the writings of most of our best authors is the antiphlogistic, by which is of course understood, bleeding, general and local; counter-irritants, such as blisters, &c.; emetics, purgatives, &c. On the other hand a few have advised a contrary course—namely, the application of local stimulants to the organ, combined with a certain portion of the antiphlogistic treatment. Among the more recent advocates of the former treatment, may be mentioned Mr. Lawrence and Mr. Travers; as supporters of the latter treatment, Mr. Guthrie, Mr. Mackenzie, and others, may be noticed.

It might easily be made to appear, that the term antiphlogistic is equally applicable, whether the depressant or the stimulant treatment is used, since both means may remove inflammation; and I think it may be as clearly made out, that in this particular inflammation the latter is preeminently entitled to that term. Our present business, however, is rather to deal with practical facts than terms of art.

It is remarkable that the advocates of either practice seem to consider theirs respectively as the most efficient plan. Thus, Messrs Travers and Lawrence make bleeding their sheet-anchor, whilst they also recommend the nauseating practice, &c., so as to reduce the system to the lowest practicable point. On the other side we are told that the expenditure of the vital fluid is unnecessary, and that we have nothing to do but to apply our stimulants, and the disease is checked. Now, if it be made clear, on the one hand, that by taking away large quantities of blood, by keeping the patient in a state of *constant nausea, perspiration, and faintness*, &c., we shall be able to arrest this formidable disease; and, if it be made equally clear, that the same success will attend the stimulant plan, it will be very easy to determine which is the best for the patient, since no one would choose the former, if equal reliance can be placed on the latter course of proceeding. But the case must be put on a different footing even from this. The cases I have witnessed of this disease have been numerous. I have seen large quantities of blood drawn from the veins, leeches in considerable quantity applied to the eyelids, and the nauseating system fully tried, and yet I have found the disease proceed in the onward march, with its train of ulceration, sloughing, evacuation of the humours, and destruction of the globe. In severe cases this seems the inevitable result, if no other plan be adopted.

On the other hand I have seen cases where nothing but stimulants have been resorted to—employed at once. In such instances, when efficiently used, the disease has been instantly checked, and the suppurative and sloughing processes have been arrested, with an immediate abatement of all the symptoms. In cases where the stimulant plan has been adopted previous to ulceration having commenced, that process has always been prevented,—a fact which cannot be stated of the depressant practice.

The mode of applying the stimulants has been somewhat varied. The nitrate of silver seems to be the favourite substance employed in these cases. By some it has been recommended in the form of solution in water, of various proportions, or made up into an ointment. My own experience has led me to prefer the application of the solid substance. A very unnecessary de-

* I have seen a case, within the last few days, of total blindness from this disease in an infant, in which the friends had been advised to apply milk-and-bread poultices to reduce the swelling, after which it was confidently predicted that all would be right.

gree of delicacy seems to be entertained by some persons about the application of this substance to the eye. Strange, indeed, it is that we should be allowed to use stimulants of all sorts to the mucous membrane of the mouth, throat, stomach, intestines, &c., and yet be refused their employment when we come to the mucous membrane of the eye. We may give sulphate of copper internally, with one physician, and nitrate of silver with another, but on no account are we to touch the conjunctiva with these applications. It is considered too irritable a part; its sensibility is said to be too exquisite; we must rather risk the destruction of the eye than touch it with any powerful stimulant. Successful practice, however, will prevail over a timid and fatal theory.

TREATMENT OF

PUERPERAL CONVULSIONS.

To the Editor of THE LANCET.

SIR,—On reading THE LANCET of the 8th of February, my attention was directed to Mr. Symonds' cases of puerperal convulsions, with remarks thereon; and having lately met with some cases which yielded to similar treatment, I am happy in being able to add my humble testimony in support of the practice he recommends. I can scarcely conceive a case more alarming to the practitioner, who has seen little of midwifery, than one of convulsions during labour; and in country practice, where there exists great prejudice against bleeding at such periods, he has much to encounter when he meets with cases demanding its employment.

Of the propriety of bleeding in puerperal convulsions there can be little doubt. In three cases I resorted to it with complete success, but I do not attribute their recovery *solely* to the venesection, but to that with the administration of a large dose of opium. The effect of the exhibition of opium after large bleedings is, in no cases (I think), more clearly exemplified than in the above-mentioned.

Puerperal convulsions may occasionally be anticipated, I have thought, if the condition of the patient be properly observed. Women are sometimes restless and irritable at the commencement, but oftener after the labour has advanced; the skin becomes hot and dry, the countenance flushed, pulse hard and full, vagina hot and scarcely moist, and the uterine efforts cease entirely, the patient complaining perhaps of headach. In many cases of this kind the abstraction of a few ounces of blood has brought on the pains, improved the quality of the pulse, and, in fact, restored the patient to a proper condition. The above were the premonitory symptoms in the first case of convulsions that I met with, and I am inclined to think that many others would have terminated similarly, had not bleeding been resorted to in time.

The determination of blood to the brain was the chief pathological condition of my patients, and appeared to be the effect of great vascular excitement during labour, in persons already very plethoric. (Hence seems to arise the propriety of bleeding during the last week of pregnancy in such persons, paying also due attention to the state of the bowels.) There is, too, doubtless, at the time of labour, great excitement of the brain and nervous system generally, which opium (particularly after bleeding) seems calculated to allay.

As to forcible delivery in puerperal convulsions, I perfectly agree with Mr. Symonds that it should not be resorted to, but that we should endeavour to remove the cause which impedes labour, as it is generally stationary when convulsions come on after it has commenced.

Case. — Rachel Rogers, ætat. 30, of robust habit, had been attended by a midwife all day, and as the latter did not like the patient's appearance, I was called in. The membranes had been ruptured some time, but the pains had nearly ceased. The patient was restless; skin hot and dry; pulse full and hard; countenance flushed; vagina hot and scarcely moist; presentation natural. I decided on bleeding, and was preparing to bleed, when she became insensible, fixed her eyes on me, and talked incoherently; I opened a vein, and before I had obtained two ounces of blood, a violent struggle came on, so that the blood flew over the attendants, and it was with difficulty that I could collect *any*. The paroxysm at length abated, and I removed the bandage, but finding her still insensible, and symptoms of an approaching struggle coming on, I replaced it, and allowed about twelve ounces more to flow, which succeeded in stopping the paroxysm. My patient was nevertheless insensible, and I did not like to abstract more blood, on account of the state of the pulse. I therefore determined on giving forty minims of *T. Opii*, after which she fell asleep, and continued so for half an hour, during which a gentle perspiration had moistened the skin, and she was awoke by pains, which soon expelled a

dead child. No unfavourable symptom followed.

The cases of Mrs. Woodford, whom I attended in October, and Mrs. Veltham, in January last, differ so little from the above, that I shall not occupy your valuable columns by a relation of them. I am, Sir, your obedient servant,

L. Owen Fox.

Broughton, Stockbridge, Hants,
Feb. 26th, 1834.

CASE, PRESENTING AN INSTANCE OF

ALMOST TOTAL DISORGANIZATION

OF THE

ABDOMINAL VISCERA.

By John Cowley, *Esq., Surgeon, Winslow.*

The following case having excited great interest in the minds of various physicians and other members of the profession, both in town and country, it may be deemed worthy of insertion in The Lancet.

Eliza O'Sullivan, of spare make, and delicate constitution, the daughter of Sergeant O'Sullivan of the 14th or Buckinghamshire regiment of foot.—Her father went to the East Indies when she was in the fifth month of her age; and the effect of the climate upon a weak and delicate frame, without doubt laid the foundation of her future and almost constant sufferings. Her father dying, she returned to England; and at the age of eleven years she was kindly fostered by the late General Sir Harry Calvert, Bart, which explains the means by which she afterwards obtained the aid and skill of so many eminent professional men. At the period last alluded to, she was frequently afflicted with complaints of the bowels, indicating functional derangement. On the 18th of December 1830, being at that time in better health, she was taken to the residence of Sir Harry Verney (Claydon House), under the expectation that the situation might prove advantageous, and add to the tone of her constitution. On the 28th, however, I was called to see her professionally, in consequence of an attack of a very aggravated nature. She was labouring under severe pain and extraordinary contractions and spasms of the bowels, forming on the abdomen hard lumps, varying from the size of a hen's egg to that of a goose's egg. These continued for the space of from five to ten minutes, but were removed by laudanum and castor oil. Borborygmus ensued, succeeded by distressing vomitings, and it is worthy of remark, that the former symptom, which resembled very much the hastily emptying of a wine-bottle, and lasted for about a minute, always preceded the vomitings, the ejections by which were generally at first of a green colour, varying in hue, afterwards becoming darker, yet not in regular succession. They were very offensive, and approaching to a stercoraceous nature. These vomitings (five or six daily) continued for several days. The pulse was thread-like, from 120 to 150; the bowels were constipated, but when brought into action the evacuations were of a bird-lime appearance and consistence, and very fetid; tongue dry, with a brown fur; excessive thirst; great emaciation, and a distressed countenance.

The usual remedies, such as leeches, fomentations, the warm-bath, glysters, blisters, aperients, and occasional opiates, were adopted, and with temporary success.

Great attention had been paid to keep the bowels open prior to this attack, from which she gradually recovered, but she did not become convalescent until the latter end of July, 1831, when she was removed to Leamington, in Warwickshire, for the benefit of the waters, and the professional skill of that place. There she remained upwards of two months, and evidently improved in general health, nevertheless the internal derangement displayed itself at frequent intervals, requiring the constant use of aperients. In August, 1832, œdema of the legs supervened, but was eventually removed, more especially by repeated blood-lettings and diuretics.

From this time (September 1832), to November 1833, the period of her last and fatal attack, her general health so progressively improved, that there appeared good reason to expect her ultimate recovery, but on the 17th of November an attack, presenting all the symptoms above-mentioned with the exception of the hard contractions, recurred, and although the usual remedies appeared to alleviate,—the leeches producing syncope, the sickness ceasing temporarily, and the bowels being brought into action,—she gradually sunk, and died on the 3rd of December.

Inspectio Cadaveris.—The body, which was extremely emaciated, was opened 27 hours after death.

The whole front of the abdominal integuments was of a dark colour. The back and under sides of the arms were slightly so. On removing the integuments

from the chest, the muscles presented a bright healthy colour. The sternum being laid back, the lungs, pleura, and pericardium, showed no signs of previous disease, nor did the heart, which was of a natural size. When carrying the incision from the cartilago-ensiformis to the umbilicus, considerable resistance was experienced, from a complete adhesion of the colon and other parts to the parietes.

The *abdominal viscera* being exposed, the entire contents presented the appearance of one mass of adhesion, and of having undergone severe inflammation. The liver was united to this mass through the whole extent of its lower edge. The omentum was quite obliterated, for in consequence of inflammation it had become interwoven with and adherent, to the different convolutions, and, by subsequent absorption, had completely lost its natural appearance. The *liver* was rather larger and softer in texture than usual; the gall-bladder was full of liquid bile; no obstruction existed in the duct.

In the *stomach* there were some slight traces of previous inflammation. The pyloric extremity was natural. The *small intestines* had been generally affected by inflammation, but the ilium more especially. The *large intestines* had likewise been affected by inflammation, but not to the same extent as the ilium. The contents of the whole were fluid, not much in quantity, and of a dirty colour, as if produced by sanguineous effusion. The internal surface or lining membrane showed nothing more than the usual effects of inflammation. The *mesentery*, where in conjunction with the ilium, presented a most extraordinary sac, whose parietes were completely scirrhous. This sac was opened in endeavouring to separate the small intestines, when a great quantity of pus escaped. The quantity thus encysted may be safely estimated at eight ounces. Other, but much smaller, glandular suppurations were discovered. The spleen, pancreas, kidney, and uterus, had no unnatural appearance.

Remarks.—From the thickened coats of the purulent sac, and the extraordinary mass of adhesion, both of which must have been of long standing, surprise may be excited that the health of the sufferer should apparently have been so good one month before death, for it should be noticed, that within the last six months preceding her death, the catamenia had reappeared on three several and quite regular periods, having occurred only once before, and that immediately preceding the attack in December, 1830. Doubtless it will be admitted, that large collections of pus have existed in the human body without hectic symptoms being consequent; but, seated so immediately in connexion with the vital organs, this must be considered as a rare case, and worthy of remark. Perhaps the absence of the large contractions in the last illness may be explained by the complete adhesion of the whole of the colon instead of parts, for in the dissection some portions were far more firmly attached than others.

During the periods of temporary relief, different remedies, such as tonics, were tried, viz. quinine, nitrate of silver, nitric acid, calumba, steel, bismuth, &c., but the stimulating effect of all, plainly proved them to be inadmissible remedies. Various aperients were resorted to, and their order of utility or agreement, perhaps, may be rated as follows: magnesia; carbonas cum jalapa; ol. ricini; decoct. aloes comp.; extract. colocynth. comp, sive et cum hydrarg. submur. The glysters were of the common kind, and of turpentine.

Winslow, January 12th, 1834.

FALSE ANEURYSM OF THE AORTA WITHIN THE PERICARDIUM.

To the Editor of THE LANCET.

SIR,—In your Number for Jan. 18th, is described a case of false aneurysm of the aorta within the pericardium. The narrator states, that authors (even "the first authority of the day upon the subject") deny the possibility of this occurrence. Allow me to say that our professor, Dr. Elliotson, in his lectures last year, not only did not deny it, but exhibited a drawing of a case of this kind which occurred in St. Thomas's Hospital. He showed how the inner and middle coats had been ruptured transversely, and blood had flowed forth under the outer or pericardial coat, which had coagulated and formed layers of fibrine, as in aneurysms of other arteries, till at length the outer coat suddenly ruptured longitudinally, and the patient died in a moment, from hemorrhage into the pericardium. Of course, as the aorta is not, like most other arteries, in contact with surrounding parts in the pericardium, he told us that no adhesion takes place externally, and therefore the aneurysm usually ruptures early; but still a genuine false aneurysm may occur, and he used specimens of this particular aneurysm as the clearest illustration to the student, of the nature of a false aneurysm, there being no confusion from its adhesion to surrounding parts.

He also referred in his lectures to the

case of George the Second, pointing out an error of Dr. Forbes in the notes to his translation of Laennec, in which it is stated that the monarch died from aneurysm of the aorta, whereas the death happened from rupture of the right ventricle. But an aneurysm was found in the aorta. The inner and middle coats had given way transversely, as in Dr. Elliotson's patient, and allowed the blood to pour forth under the outer coat, and distend and elevate it. The mischief, however, had proceeded no farther, the outer coat not having given way. So far from the "first authority of the day on the subject"* being right in saying that aneurysm cannot occur here, and that because "the part of the aorta referred to is destitute of a cellular tunic, and the pericardium which supplies its place not being equally distensible, bursts rather than dilates into a false aneurysm, Dr. Elliotson pointed out to us that Dr. Nicholl, who examined the body of George the Second, and published an account of the examination in the *Philosophical Transactions* for 1761, says, "This appearance showed the true state of an aneurysm of the aorta, and confirmed a doctrine which I had the honour to illustrate, by an experiment to the satisfaction of the Society, in 1728, viz. that the external coat of the aorta may, and often does, control an impetuosity of the blood capable of bursting the internal and ligamentous coat." I am, Sir, your obedient servant,

A STUDENT AT THE LONDON UNIVERSITY.

March 1st, 1834.

ON THE

TORSION OF ARTERIES

FOR THE PURPOSE OF ARRESTING HEMORRHAGE.

By W. B. COSTELLO, *Esq.*, *London.*†

IT was originally my intention, in bringing the subject of the torsion of the arteries under the notice of the Westminster Medical Society, to state merely what I had seen of that process during a visit which I have lately made to Paris, and to express, in addition, my gratitude to M. Amussat, for his kindness in directing the experiments I then performed, under his eyes, on this interesting point. But in meditating on the subject, I have found it so deserving of an ample *exposé* in this country, that I have resolved upon giving such a view of it as will connect it with the other hæmostatic processes now in use in surgery, most of which are of very high antiquity.

The arrestation of the current of blood, according to that excellent observer, Jones, depends on the formation of a *conical clot* in the arterial tube, on the retraction and contraction, or puckering, of its extremity, and on the pressure of the parts surrounding the cut end of the vessel. When these causes are sufficient, as they often are, to stop hemorrhage from small vessels, of course all other means are dispensed with. Koch, of Munich, is in the habit of relying on this spontaneous ceasing of the flow of blood, and favours it by the position of the limbs, in cases of amputation, as well as by the application of cold lotions.

Hemorrhage is also stopped by *laceration*. Of this we have an example in the removal of certain tumours, where the vessels that supply them, or with which they are connected, might forbid the use of the knife. When a limb is torn off, the vessels which have been drawn violently out, retract in some degree, and no blood flows. In this we have an instance of the influence of laceration and retraction combined. It is well known, that when "littering," certain animals separate themselves from their young by gnawing asunder the umbilical cord; and Jones has shown, that if an artery be pinched and jagged, the internal tunics are torn, and assist the formation of the clot, and prevent hemorrhage.

Again, if a small divided artery be drawn out, and turned down on itself, until the clot has had time to form, the blood ceases to flow. This method has been successful in the intercostal artery, and others of small caliber. *Styptics* of various kinds and in various modes have been used for the same purpose. Thus, small cones of alum or sulphate of copper have been used as corks in the mouth of the cut artery. These means have justly fallen into disuse. Talrich's styptic has been tried; but it appears useful only in small vessels. Agaric, amadou, cobweb, sponge, and powdered resin, have been looked upon as endowed with a styptic power; and, in capillary hemorrhage, solutions of sulphate of iron, sulphate of copper, of alum, or nitrate of silver, are found effective.

Cauterization is now but little used, except in operations on the rectum or uterus. In such cases the iron is usually applied at a white heat, on the mouth of the vessel, to which it is passed down through a conducting tube of the same metal. If the iron be not at a white heat, it adheres to

* This title belongs to no man more truly than to Dr. Elliotson.—ED. L.

† Communicated to the Westminster Medical Society, February 8th, 1834.

the eschar and detaches it, so that the blood continues to flow; and even when it is applied at the proper heat, if it be allowed to remain too long the same effect will follow.

Compression is of great use, and is of two kinds, direct and indirect: direct when the vessel is commanded by the finger of the surgeon, in a small wound, or a flap amputation, or with the graduated compress of agaric, lint, or folds of linen, &c.; indirect, when it is established at a distance from the wound, by the tourniquet or any other means. It is needless to remark, that these different modes are resorted to, separately or in combination. I have seen a capillary hemorrhage which could not be checked by direct compression until the femoral artery was compressed.

Koch of Munich's method after amputation, consists in joining the flaps by bandages, placing a long compress on the artery, and raising the limb. An assistant keeps up a gentle and continuous pressure for several hours, and until the pulsations are observed to become weaker in the stump. He considers the danger from hemorrhage to be at an end when the dressing becomes dry and stiff, which it does within twelve or twenty-four hours.

The *ligature*, the thought of which Paré looked upon as an inspiration vouchsafed to him by the Almighty, was not, however, an invention of his time. It was described by the ancients. A description of this method, comprising its effects on the artery, the substance of which it should be made, the manner of its application, &c. would form subjects ample enough for the consideration of an entire evening. Happily being the plan most in use, it is also the best known, and, therefore, in this assembly especially, the details which belong to it may be omitted. I shall merely add that Jones recommends the use of a very slender thread of silk, applied tightly enough to cut the internal tunics of the artery. Of the application of ice and temporary ligatures I need say nothing.

The operation of *torsion* has in its effects great analogy to the ligature, and seems capable of supplanting the ligature in many cases. It is simple, and in saying this we give it the highest recommendation that can be bestowed on a surgical process. The merit of its invention belongs, undoubtedly, to M. Amussat, and would, if he had no other of his numerous claims to fame, suffice to render his name illustrious amongst the surgeons of the present age. As I have said before, there is nothing new in crisping, jagging, or even turning on its axis, a divided artery in order to stop hemorrhage; for from the time of Galen to our own time, this process was known, but the operation of torsion,—in the sense which is now attached to the word torsion—methodical in its arrangement and certain in its effects,—is an entirely new and most valuable hæmostatic process.

M. Amussat having observed that in gun-shot or contused wounds, or in great lacerations of the limbs, even large vessels rarely bleed, imagined, that by imitating this contusion of the vessel, the same effect must follow. In order to test this idea, he instituted a series of experiments, which, however, led to no decisive result. But he was struck on one occasion, in which he had twisted the artery, with the fact, that it furnished no blood, and thus an accident developed the truth which his reasoning from other facts had anticipated.

I shall now describe the manner in which M. Amussat practises torsion. He seizes the divided vessel with a pair of torsion forceps, in such a manner as to hold and close the mouth of the vessel in its teeth. The slide of the forceps shuts its blade, and the artery is held fast. The artery is then drawn from out of the tissues surrounding it, to the extent of a few lines, and freed, with another forceps, from its cellular envelope, so as to lay bare its external coat. The index and thumb of the left hand are then applied above the forceps, in order to press back the blood in the vessel. He then begins to twist the artery. One of the methods consists in continuing the torsion until the part held in the forceps is detached. When, however, the operator does not intend to produce that effect, he ceases, after from four to six revolutions of the vessel on its axis for the small arteries, and from eight to twelve for the large ones. The hemorrhage instantly stops. The vessel which had been drawn out is then replaced, as the surrounding parts give support to the knot which has been formed at its extremity. The knot becomes further concealed by the retraction of the artery, and this retraction will be proportionate to the shortening which takes place by the effect of the twisting, so that it will be scarcely visible on the surface of the stump. It is of the utmost importance to seize the artery perfectly, and to make the stated number of twists, as otherwise the security against the danger of consecutive hemorrhage will not be so perfect.

It has been already stated, that when we apply a ligature, the internal tunics of the artery are divided. In the torsion, these tunics are also divided, but in comparing one with the other, there will be this difference,—that in the case of the ligature, the internal tunics, though de-

tached from the cellular coat, remaining nevertheless, close to it, so that there exists but very little space between them; but in the torsion these tunics ascend, and take a position in the middle of the clot, to the rapid formation of which they contribute, and the clot itself extends to the next collateral; a space exists between the knot and the internal tunics, in which the cellular coat inflames, when plastic lymph is thrown out, and the first obturation of the end of the vessel is effected. The same process of exudation takes place from the internal tunics higher up, and the clot thus becomes adherent to the circumference of the arterial tubes, and thus also the obliteration of the vessel is rendered doubly secure.

Experiment 1.—M. Delcroix, M. Amussat's assistant, laid bare the femoral artery of a middle-sized dog, when I applied two pairs of forceps on the vessel, which I divided in the interval, and, according to the process described, twisted the upper end eight times, and replaced it. There resulted no hemorrhage. I then twisted the lower one, but not being *au fait* of the manœuvre, which I should observe requires tact and practice, it was imperfectly effected. Consecutive hemorrhage came from the lower vessel, which I sought, and again seizing it and freeing it from its connexions, I twisted it eight times, when the hemorrhage instantly ceased.

Experiment 2.—I laid bare the femoral artery of a large dog. The vessel was of large caliber; I proceeded as before, and no hemorrhage took place.

Experiment 3.—The carotid of a mastiff was laid bare, and I practised the torsion as before. The size of the vessel was considerable. I twisted the vessel on the side of the capillaries eight times, and on the side of the heart until the rupture of the portion held in the forceps was effected. No hemorrhage ensued from either.

Experiment 4.—The femoral of a large dog was laid bare, and was twisted in the usual way on one side, until rupture was effected, and on the other until a knot only was formed. I now, at M. Amussat's suggestion, untwisted the knot. No hemorrhage followed, although the knot was entirely untwisted.

Experiment 5.—In another experiment the epiploon of a dog was exposed, and a portion of it removed. The divided arteries, which were numerous, furnished blood abundantly. They were seized and twisted two or three times each, when the hemorrhage ceased.

It would be tedious to prolong the recital of experiments, for they invariably, and under whatever circumstances performed, furnished the same results.

Another illustration of the efficacy of torsion will be found in the torsion of any given artery, the radial for instance. If a syringe be applied higher up, and water be impelled from it through the tube of the twisted vessel, the knot will be raised up, but it will remain untwisted, and not a drop of water will pass, no matter what force we employ.

In examining minutely what takes place in the twisted artery, we find the internal membranes twisted and forming a cone, of which the apex is directed towards the heart. If we cut this cone longitudinally, it presents a clot of blood which is strongly adherent to the inner coat of the artery, and which completely stops it up. If we examine the artery, at a certain distance of time from the period of the operation, we find this clot and membranes solidified, and the vessel obliterated as far as the next collateral.

So much for experiments on the lower animals.

The method of torsion has been employed in operations on the human body with the same results. M. Amussat himself now employs no other hæmostatic method, and I can state that he has found it successful, in castration, in amputations of the thighs, arms, &c., and in the disarticulation of the shoulder-joint M. Fricke, of Hamburgh, is so satisfied with this method, that he employs no other, either in his private practice, or in the hospital over which he presides.

The frequent examinations which M. Amussat has had an opportunity of making on the effect of the torsion of arteries, have suggested to him another method, which he calls *refoulement, or pushing back into the arterial tube the divided internal membranes*. The refoulement of these membranes is effected without any division of the artery. The vessel is simply laid bare, and seized with a forceps, beaked in the usual way, but which, above the beak, is rounded in both blades. The artery is pressed strongly between the rounded part of the blades, and thus the internal membranes are cut. Another and a similar pair of forceps is now fixed on the flattened vessel, and the membranes are pushed back, or *refoulées*, by a zigzag movement of the first forceps. One, two, or three, or more, of those *refoulures* or *machures* may be made; and from some of the arteries treated in this way I saw the following results. The outer or cellular coat inflames, and plastic lymph is exuded. The internal membranes fall into the same circumstances as in the case of torsion, but with this difference,—

that the number of diaphragms arranged to form clots, is in the ratio of the *measures* made on the artery.

In no instance, when properly employed, either in animals or in man, has the twisted artery been observed to ulcerate, or become gangrenous. Its effects, and the organic changes which it produces, appear to be these:—the internal membranes are broken; they become narrow, or, rather, roll up and join, so as to form a *cul de sac*; they pour out plastic lymph, which adheres to the clot, which is formed immediately and invariably between this point and the nearest collateral. The outer membrane forms another *cul de sac*, and its internal surface pours out plastic lymph also. A similar process takes place between the outer surface and the surrounding parts.

Let us now see what takes place when the ligature is employed.—1st. Jones states that the middle and inmost membrane, when cut by the ligature, join, and that the cellular membrane remains entire, the blood passing through the collaterals.—2nd. A clot is formed in the arterial tube, if there be no collateral vessel immediately near it.—3rd. An inflammation of the cut membranes takes place, and they become agglutinated by the plastic lymph which they pour out. The same process obtains on the outer surface.—4th. The portion of the artery, comprised in the ligature, ulcerates, and it is only when this process is complete that the ligature drops off.

We can now appreciate the advantages or disadvantages inherent in either method. When *torsion* or *refoulement* of the internal membranes is employed, the wound may be united by the first intention. There is no foreign body in the wound, and there is no danger of consecutive hemorrhage.

When the ligature is had recourse to, there is a foreign body in the wound, which must be thrown off by ulceration or gangrene. It often happens that the ulcerative process extends to the surrounding parts, and consecutive hemorrhage takes place, when the end of the artery and the ligature are thrown off. Moreover, the external wound sometimes heals before the ligature is detached. In this case there is danger of an unmanageable fistula. One of the great advantages, therefore, of torsion is, that it allows immediate union of the wound, as will be particularly evident in hemorrhages of the epiploon, and in aneurysm of the carotids, for in the latter case there is great risk of the ligature giving rise to *fusées* of pus descending into the cavity of the thorax. The application of ligatures requires the aid of an assistant. The torsion may be effected by the operating surgeon alone, and, undoubtedly, on the field of battle, this is an incalculable advantage. It is also but fair to infer from what precedes, that torsion may be of the highest importance, in operations which may be performed on the capillary side of an aneurysmal tumour.

*** In compliance with a request made by the Society on the evening that the subject of the foregoing communication formed a topic of debate, Mr. Costello attended to perform the experiments of torsion before the members at the meeting of the 22nd of February, when, after making a few prefatory observations on the cruelty of vivisection when the interests of science did not imperatively demand and fully justify it, he proceeded to expose the femoral artery of a terrier dog. The operation was performed with exactness and rapidity. The vessel being laid bare, and a probe passed under it, the members were invited to satisfy their minds that the vessel exposed was the femoral, by examining its size and pulsation, after which Mr. Costello placed two forceps on the artery in such a manner as to make the points opposed to each other leave but a very short interval between them. He then divided the artery between the two forceps, and commenced twisting the upper portion of the artery, and having counted five turns, he replaced it in the situation from which it had been drawn forth. For a short time there was no hemorrhage; he was now about to twist the capillary side of the artery, when the upper division gave out blood in a full stream; he instantly stopped the hemorrhage with his finger, and requested Mr. Quain, who was assisting him, to twist the other extremity of the vessel, which was still held in the forceps. Mr. Quain made eight turns, and having replaced the artery, not a drop of blood came forth. Mr. Costello now seized the upper end of the artery, and having twisted it seven times, replaced it. The wound was then examined by many of the members; there was not only no hemorrhage from either of the ends of the artery, but the wound itself seemed bloodless. The experiment was deemed to be so satisfactory, that the carotid was not exposed, as was at first intended, and the satisfaction of the Society was testified by much applause. The observations which were afterwards made by members terminated in a general assent to the reasonings of Mr. Costello and the value of the process demonstrated.

ON THE DISORDERS PRODUCED BY

THE USE OF TEA AND COFFEE,

WITH REMARKS ON THEIR TREATMENT.

By THOMAS BENT, M.D., *Derby*.

To the Editor of THE LANCET.

SIR,—Several months ago, a short essay from the pen of Mr. Cole was published in THE LANCET, having previously been read at the *London Medical Society*, "On the Deleterious Effects of Tea and Coffee in excessive and other quantities;" and this gentleman, I perceive, has lately read a supplement to his former paper at the same Society, confirmatory of his former views. Having myself been a sufferer from the prejudicial influence of tea and coffee, the subject has engaged my attention for a length of time, and as it may afford some gratification to Mr. Cole to have the correctness of his remarks confirmed by the experience of others, I am induced to trouble you with a few observations, wishing you to insert them in your valuable journal, should you think them of sufficient interest to merit a place there.

My opinions on this subject have been long known to several of my medical friends, and to many of my patients; but I must confess that I have been deterred from avowing them to the full extent of my convictions, from an apprehension of the strong host of prejudice which they would have to encounter, arising out of the feeling so universal on the part of the public in favour of their favourite beverages. In opposing the notion of their perfect innocence and wholesomeness, I feared to subject myself to the charge of being absurdly fanciful, or prepossessed against them, because they happened to disagree with myself. Many professional men are, no doubt, influenced much in their dietetic opinions and prescriptions, by the effects produced on themselves by various sorts of food; and being fully aware of this fact, I have exercised the greatest possible caution in making deductions from observations on others, regarding symptoms which appeared to me to originate in the use and abuse of tea and coffee. I can assure you I am a most unwilling witness against them; my convictions have been forced upon me reluctantly, it having been a source of great mortification to find myself obliged to desist from the employment of these very grateful and exhilarating fluids, and to be the means of depriving others of the enjoyments which they afford. Considerable experience has, however, fully confirmed me in the opinion, that very many persons are indebted to them for complaints occasioning great and severe suffering, and which it has been customary to refer to other and less obvious causes.

That many practitioners should have overlooked this source of disorder, need not excite any very great surprise. If they have not experienced ill effects in their own persons, they may stand excused in being unaware of the existence of such a cause of complaint, no one having described the symptoms, or even conjectured, that maladies of so serious and afflicting a character could originate in a habit so universal.

It is true there are few who have not at times met with instances of persons with whom tea and coffee have disagreed, and particularly green tea; but it yet remains to be acknowledged that they are a fruitful source of serious disorder. Of course I am fully aware there are thousands who have taken them twice daily throughout a long life, without perceiving them to be in any degree detrimental; but it does not on that account necessarily follow that there are not a still greater number injuriously affected by them.

Alcohol, opium, and tobacco, are taken by numberless persons daily, with very pleasant effects, in limited quantity, and their use is not incompatible with long life and freedom from disease; but it happens more frequently that they are grievously pernicious, even in what is considered moderate quantity, and become the bane of health, and destructive of enjoyment. A noxious influence is occasioned by many poisons, which, being received in minute quantity daily, at length show their deleterious consequences; the time being greater or less according to special idiosyncracies, but which are almost altogether harmless in some particular constitutions. It is so with respect to lead. I have been told by those who employ workmen in the manufacture of white lead, that they have men who have resisted its baneful influence for twenty or even thirty years, and others whom they have been obliged to remove to other occupations in three months, in consequence of the injuries sustained by it, and there may be found every intermediate degree, as regards time. Those changes which bring down the constitutions of individuals from a higher to a lower standard of health, and render them susceptible of disease, are most commonly wrought imperceptibly, in a length of years, by exposure to various external influences of a prejudicial kind. The immediate effects

are altogether invisible, and not to be traced, except like the growth of a child, of which we are insensible from day to day, but which becomes sufficiently apparent after a certain lapse of time.

The objection to the opinion of tea and coffee being very prejudicial, in numberless instances, in the quantity usually taken daily, and in many more when its use is more frequent and excessive, which is grounded upon its very agreeable and enlivening effects at the time of taking it, is very futile and unsatisfactory. Indeed, if it proves anything, it proves too much, for it is not unreasonable to suppose that what acts so powerfully in exhilarating, and changing so quickly the tone and condition of, the feelings, cannot be altogether innocuous; but must tend, like other things producing a similar influence, to change, and at length seriously injure, the functions of those organs upon which it operates.

If it were necessary I could add many to the cases given by Mr. Cole; but my only object at the present time is to confirm and vouch for the general accuracy of his statements, and to assist in directing attention to the subject. I could adduce many instances of patients who have been brought under my care after others had failed to give relief, and wherein a successful issue has been obtained by no change in the management, with the sole exception of an altered regimen as respects tea and coffee. They have been for the most part cases such as are usually brought under the denomination of dyspepsia, pyrosis, hysteria, and nervous disorder.

The first of Mr. Cole's cases is one of very common occurrence. The earliest morbid sensations are perceived in the stomach, and what one describes as a sinking, another calls craving or gnawing. They are mostly felt soon after meals, and particularly after tea in an evening, which has always appeared to me to produce worse effects at that time of day than when taken in a morning. In order to relieve those uneasy feelings recourse is frequently had to eating again, which seldom fails to increase the mischief after a little time. Better success attends the use of some slight cordial, such as a teaspoonful or two of brandy, or some other spirits, and I fully concur with Mr. Cole in thinking that habitual dram-drinking not unfrequently arises from a desire experienced to relieve the irksomeness of these painful sensations, by the use of spirituous liquors. By degrees an impairment of the nervous system is established, and a variety and complication of disorders ensue. The head suffers materially from pain and giddiness, and what are commonly called bilious or sick headachs are frequent. The heart soon partakes in the derangement, often intermits in its action, and is liable to palpitation. The limbs, particularly the hands, sometimes become tremulous, and a general irritability affects the system, and is accompanied by a worn, sunk expression of countenance, and loss of flesh.

In the treatment of these complaints, after a knowledge of their cause has been established, all difficulty has not ceased. The practitioner has still to encounter the long-standing prejudices of his patients, who not unfrequently protest against the loss of their favourite beverage, and declare if they give it up they shall lose all the comfort they have. They cannot, at once, be made to understand how it can happen that what they have been accustomed to all their lives, and which has afforded them so much comfort and gratification, can be the occasion of so much uneasiness and disorder. Their conviction will generally be obtained by persuading them to try a change for a week, in which short time they will have experienced a beneficial alteration in their sensations, sufficient to produce a revisal of their opinions.

Though in the foregoing remarks I have named tea and coffee conjointly, I do not mean to assert that their effects are in all respects similar. The first signs perceived from the former beginning to disagree, are a peculiar gnawing uneasiness soon after it is received into the stomach, attended with some flatulence, and now and then heartburn, and these symptoms are commonly accompanied by a sense of lowness and depression, as well as a wanting feel, like hunger. Coffee generally occasions a sense of warmth and excitement, and the person who takes it feels satisfied longer than after tea. The secondary and more important effects are much alike, both being the consequence of the nervous system having sustained more or less derangement and injury.

The most grateful substitute I have been able to devise for tea and coffee is bread tea, or in other words, toast and water, with a little cream in it. Ginger tea, as suggested by Mr. Cole, is also not unpleasant to some. To either of them a teaspoonful or two of brandy may be added advantageously by those who are under treatment, and until convalescence is established. I am, Sir, your obedient servant,

THOMAS BENT, M.D.

Derby, March 1, 1834.

THE LANCET.

London, Saturday, March 8, 1834.

In the villages of England, Ireland, and Scotland—in the cities—in the metropolitan towns—in the Universities—in the Colleges of the United Kingdom—the question of medical polity continues to be debated with undiminished ardour and anxiety.

It is somewhat strange, however, to observe that, in many situations, where not one syllable had hitherto been uttered with respect to the alterations which should constitute a new system of medical government, the inquiry should be commenced, as it were, by promulgating plans for the construction of a judiciously arranged, goodly assemblage of medical colleges, corporations, and societies. Such conduct, however, is so well calculated to excite suspicion, that it must fail to inflict any serious injury on the cause.

Leaving out of consideration the indelicacy of attempting to seize on what must be the result of a patient, protracted inquiry before a Committee of the House of Commons, can anything be more unreasonable than to select as a period for the dissemination of schemes for a new government, a time when the Parliamentary Committee has not yet been enabled to put a single question, *viva voce*, to one witness with respect to the disgusting practices and misshapen structure of the old system?

Up to the moment when the motion for the appointment of a committee of the House of Commons was carried, it was right that those who had investigated medical abuses,—who had inquired into the injurious consequences of the present system of management, should institute a comparison between the supposed perfections of a *correct*, and the known imperfections of a *wrong*, system. By directing attention to a constitution the basis of which was *justice*, the anomalies existing in our established corporations became more evident to the senses, and thus operated, with characteristic tenacity and force, in urging the judgment to insist on the necessity of an alteration which might be freed from the crudities engendered by ancient ignorance and prejudice.

Acting under the influence of these views and motives, the medical reformers were justified, when they petitioned for inquiry, in stating the object which they sought to attain by an investigation before Parliament, viz., an equalization of medical rights and privileges in all parts of the monarchy. But now that the Committee is appointed, is it decent, is it respectful to the members of that assembly, to bother them with conclusions before they have had an opportunity of eliciting a single circumstance out of the prodigious mass of facts on which their own conclusions must ultimately be founded? The subject of medical polity has been discussed with earnestness in the pages of this journal during ten years, and, surely, those reformers who have waged war with so much effect against the corruptionists may claim some little respite,—may insist on the propriety of withholding an admiration of certain principles,—of illustrating the expediency of resorting to particular details—until Parliament is in possession of a knowledge of those facts which induced the reformers to take up the cause of medical reform, and prosecute it with unabated zeal up to the moment that Mr. Warburton, faithful to his pledge, succeeded in carrying his motion for a Committee of Inquiry. Having sounded the thunder of reform in all the forests and coppices of corruption, we can ourselves be content, for a while, to listen to the yelping of the puny curs who never raised a note until the quarry was secured,

and we call on the medical reformers of England, Ireland, and Scotland,—that is, on forty-nine fiftieths of the medical profession,—to rely with confidence on the capacity and integrity of the medical committee and the wisdom of Parliament. The subject of medical reform does not embrace a party question. It cannot awaken bad passions or injurious prejudices, except in the minds of men who have been the common plunderers of the profession to which they belong, and who have consented to luxuriate on the miseries of their fellow-creatures.

Relying, then, on the judicious and able guidance of Mr. WARBURTON, and the Committee of which that gentleman is chairman, let us prove the sincerity of our desire to leave the inquiry to a generous conclusion, by presenting such evidence to the Committee as shall contribute to elucidate, in an effectual manner, all that has heretofore been wrong, and all that may hereafter be right, in medical government. Petitions from medical men can *now* be of little or no use, because all ulterior measures must be founded on *the facts which will be elicited by the Committee*. It is, therefore, on the number and importance of those facts, to which it is the duty of the profession to contribute. When the evidence is complete, and when the report founded thereon has been laid before Parliament, *then* it is possible that the process of petitioning will be rendered necessary *in right earnest*. At that time it may be of the utmost importance, that every practitioner in the empire should record his opinion in favour of a particular system of medical government. But until such a moment arrives, let us evince our gratitude to Mr. WARBURTON and the House of Commons, by assisting in the accumulation of *facts*, and thus prove that the Committee is not occupied in a labour of supererogation, and that a further postponement of a legislatorial inquiry into the atrocities perpetrated by the medical corporations, would have been equally unjust to the public, and cruel to the medical practitioners of the United Kingdom of Great Britain and Ireland.

Complaints have been made in several quarters—not, however, where much influence now exists—that the sittings of the Committee are unnecessarily delayed,—that the members of that body are not very eager to embark on their new duties,—that the Reformers are losing confidence from this circumstance. In short, it has been hinted that there is a hitch somewhere. A plain statement of facts furnishes the best negation to this ill-timed surmise.

Instead of the postponement manifesting, in the least degree, the indisposition of the Committee to proceed with earnestness into the inquiry, it proves directly the reverse; for, during the interval which is elapsing between the adoption of Mr. WARBURTON's motion, and the first sitting for the reception of oral evidence, returns have been moved for from the universities and medical corporations, which have already accumulated on the table of the committee-room to a prodigious extent,—thus furnishing the Committee with documents which will enable them to question the witnesses on statements of fact,—documents which, in short, will enable the Committee to grapple with the monster of corruption where it is deemed he is best fortified against attack. Instead, therefore, of the delay of the sittings having been productive of a want of confidence in the minds of medical reformers, the time that has already elapsed, and is elapsing, having been used, and being still employed, so advantageously, so wisely, this first act of the Committee will, we are bold to say, when known, secure for them the confidence and respect of the profession throughout the whole of the

investigation. The returns once secured, the inquiry can be prosecuted with admirable precision and effect. In the absence of such documents it might have proved a sham scrutiny. By this most judicious proceeding the members of the Committee have supplied themselves with probes which, we doubt not, they will thrust down to the deepest points of the wounds that will be subjected to their examination.

We have received several letters containing animadversions on parts of a leading article on medical affairs, which appeared in *The Times* of Monday last. It is unnecessary that we should insert those communications, because nothing can be more certain than that our correspondents have misunderstood the object and tendency of the article in question. So far was it from attacking in mass the whole medical profession, that it directly —in bold and comprehensive terms—upheld the cause of all qualified practitioners against the tyrannies and usurpations of the monopolizing corporations. The writer certainly said nothing in favour of unqualified practitioners, and it could not be expected of him that he should say anything in their favour. Although ignorance may, in some instances, have succeeded in obtaining the protection of the law, it cannot be expected at this hour that it will receive the respect of the public, and still less can it be expected that it will experience a favourable mention from those writers whose duty it is to instruct the public. General practitioners in medicine stand upon a rock of security; and it was one of the objects of the writer in *The Times* to show that they had attained their elevated position in spite of the obstacles which have been purposely thrown in their way by some of the medical corporations.

In answer to many inquiries relative to the publication of the evidence before the Parliamentary Committee, we may observe, that we shall be governed in our conduct by the decision of the Committee. Should that body deem it expedient that the evidence should not be published until the inquiry is concluded, and make an order to that effect, we shall, from feelings both of duty and of inclination, yield implicit obedience to it. It certainly appears to us, after having devoted considerable attention to the subject, that the evidence cannot be published in detached parts, without inflicting severe injury on individuals, from the circulation of *ex-parte* statements, and without placing the successful termination of the whole investigation in some degree of hazard.

The Committee will not sit for the examination of witnesses until after the 16th inst.

WESTMINSTER HOSPITAL.

RETIREMENT OF MR. LYNN.

At the expiration of nearly sixty years of service in the office of surgeon, the venerable Mr. Lynn has tendered his resignation as senior surgeon, to the governors of the *Westminster Hospital*. The announcement was made in the following communication:—

"Clapham, Feb. 13, 1834.

"Sir,—Having directed all my best energies to the good of the Westminster Hospital for nearly sixty years, I beg, through you, to offer my resignation to the Governors. The hospital is now about to flourish in a new building, and in a new position, and I trust it will continue to flourish long after I can expect the pleasure of witnessing it. I am, Sir, your most obedient servant,

"William Lynn."

"To the Hon. P. P. Bouverie, M.P.,
Vice President."

This resignation having been accepted, Mr. Lynn was requested, in the second of the following resolutions, to accept the office of "Consulting-Surgeon" to the hospital.

"Resolved, unanimously, that the best thanks of the Board be expressed to Mr. Lynn for the great services he has rendered the institution during a long series of years, both by his influence as a governor, and by his abilities as a surgeon, and to mark their sense of the obligation which

the trustees feel under to Mr. LYNN for those services, it is hereby resolved that the next quarterly board be made *special*, for the purpose of submitting a resolution, that Mr. LYNN be requested to accept the appointment of consulting-surgeon to the hospital."

"Resolved, That the resolution of the Weekly Board of the 21st of January be confirmed, and that Mr. LYNN be requested to accept the appointment of consulting-surgeon to the hospital."

Having been furnished with a copy of these resolutions, Mr. LYNN addressed the following reply to the chairman of the General Board:—

"Clapham, Feb. 22nd, 1834.

"Sir,—I accept the office of consulting-surgeon which the governors have conferred upon me, for it would be inconsistent with the whole tenor of my life, to neglect any opportunity of serving an institution which has been most useful to me. It would be very grateful to me to find that the recollection of my long services had proved favourable to the interests of my nephew. I am, Sir, your most obedient,

"WILLIAM LYNN.

"To the Chairman of the General Board."

Thus Mr. LYNN and Sir WILLIAM BLIZARD, the two veterans of the College, have retired from the active duties of their respective hospitals, almost contemporaneously, and both, under the most honourable and gratifying circumstances, have been elected by the governors to the dignified office of consulting-surgeon. We believe that the *Westminster* and *London Hospitals* have been indebted for the pecuniary support which they have received, to their private and professional exertions. Mr. LYNN, for a very long period, was almost the sole stay of the *Westminster*, having obtained the addition of many thousands of pounds to the funds of that institution. In addition to this circumstance, it may be stated, that the deserved reputation of Mr. LYNN as an operator, obtained for the surgical character of the hospital considerable renown, and, consequently, a large share of support from the nobility and gentry at the west-end of the metropolis. Had Mr. LYNN, therefore, on his retirement from the office of surgeon, failed to receive the respectful homage of the governors, such an omission, while it could not have detracted from the value of the services which he had rendered to the institution, would have been highly disgraceful to the discernment and feelings of the governors.

NOTES OF A NORTHERN TOUR BY A SOUTHERN LECTURER.

St. Bartholomew's Hospital,
March 1st, 1834.

MR. ——— presents his compliments to the Editor of THE LANCET, and forwards for insertion in his Journal the accompanying notes of a visit to Edinburgh. They were picked up this afternoon in the theatre of anatomy, close to the lecturer's chair, shortly after Mr. STANLEY had concluded his demonstration. As the writer evidently intended the document for publication, I feel no hesitation in transmitting it to your Journal, by means of which it will derive the largest possible circulation.

"*Journal of my visit to Edinburgh.*

"August, 1833.—Left the Thames in a steamer called the *United Kingdom*. I was accompanied by Mr. Blank. We dropped down the river at twelve o'clock at night. Fearing the want of provisions, or, at least, fearing their *quality* in a Scotch vessel, I carried on board with me a small cask of butter and a double-Gloster cheese, which father took care was of the best. I was very sick and vomited a good dinner I had eaten at the Surgical Club in the evening, prior to its dissolution. I arrived in Edinburgh in forty-eight hours,—a capital passage. Went to one of the cheapest hotels,—had a bad dinner, a good bed, and drank freely of whisky.

"Devoted the first day to rambling about the 'Modern Athens.' It is a magnificent town, and like no other I ever saw. I was staggered, not so much with its magnitude, as with its picturesqueness. What it is to be born a cockney! Most of my London friends believe Edinburgh to be merely a village in a foreign land! I walked about all day. The hackney-coaches are excellent, but they are expensive. There is no stir or bustle in the streets, no appearance of trade going on, but it looks like what we are told it is,—a nursery for science.

"The next day I devoted to paying visits, and calling on the most eminent

professionals. All very civil and hospitable. They seem to look upon a 'London surgeon' as a lion. I talked rather big with Dr. ——— about *our* hospital, *our* operations, *our* museum, and *our* fees, but the Scotchman shook his head, and would believe nothing but that our hospital fees were larger than theirs. This last observation was enough for me, so I avoided the subject, with some others that were not pleasant to talk of. I found all the surgeons reformers to a man. My eye was caught by THE LANCET in every one of their libraries. Several asked me if I ever read THE LANCET, and one had the impertinence to ask me if I was a contributor to it! I hinted at the superiority of Macleod's Imitation, but these long-headed Scotchmen, I find, are not easily gulled. They quizzed me about MACLEOD'S being kept up by *subscriptions*, and said that its object was not to promote science, but to protect ignorance and propagate lies, and that it contained so much nonsense, and was conducted with so little of the feeling that should actuate gentlemen and men of honour, that they kept it out of the students' sight, and that it was never seen in any respectable house. I at once plumply denied all connexion with it, and lauded THE LANCET.

"Third day—visited the *Royal Infirmary*,—never having supposed that there was any good hospital in the world but *St. Bartholomew's*, or any good surgeons in Europe but myself and Mr. VINCENT. Think of my surprise on finding that the Edinburgh Royal Infirmary had a beautiful exterior, and a well-regulated interior! The manner in which this edifice was erected confers the greatest credit on the Scotch people. It was built about a hundred years ago, but in place of being done by contracts, and paid for with the money of kind friends—as we do these charitable things in London,—Dr. THOMSON informed me that the masons and carpenters of the town used to come—after their daily work was finished—and labour at the hospital, and that various people who could not afford to give money used to lend their horses and carts to transport the building materials. Our English hospitals admit only those patients who are recommended by subscribers, and hence arises the system of subscribing on the part of masters of families, &c., to our hospitals and dispensaries, in order that they may get their servants and dependants doctored at the cheapest rate. Now, the Edinburgh Infirmary is open to every man who chooses to apply for admission, requiring no other passport than bodily ailment. This is what the Scotch people consider true charity. I only know that we hospital surgeons in London cannot afford to act in any such spirit. The Infirmary or Hospital contains about four hundred beds, which is three hundred more than our London College Council require by their regulations. The surgical wards have been lately added, and there is an operation-room, capitally contrived both for the operator and the spectators, and capacious enough to hold, I guess, five hundred students. I saw many most interesting cases. The business of the hospital is considered to be an improvement upon our London system, for every surgeon and physician attends daily, and great attention is here bestowed on the sick. All the medical men attend most punctually at twelve o'clock midday, each accompanied by his assistant or clerk. I remember the time when our Bartholomew men went their rounds *once a week*, and never even *looked* at many of the patients. That, I believe, is still in great measure the case at Guy's Hospital. There has, however, been a great change in this respect since the publication of the CUTTER. There are regular clinical lectures given in Edinburgh, both by the surgeons and the physicians (a new thing in our schools, and very far from being common); and there is an accurate journal kept of every case,—not for the *private* use of the medical officers of the hospital, as with us,—when any entry is made at all,—but for the students, for whose inspection and use the books are left for a certain number of hours each day in an appropriate room, where they may read or copy as much as they like. All the cases are entered, and the patients are visited morning and evening by the clerks.

"Nothing astonishes me so much as the low fee for attending the hospital. Only five guineas for twelve months! Good gracious! I shall not be believed when I tell this in London. EARLE and myself have long agreed that thirty guineas was *too little* for permission to walk St. Bartholomew's for a year, and I was not aware that a better commodity and a greater quantity of it could be got anywhere in civilized Europe for five guineas. Everything here is dirt cheap. There are six dressers, who assist the surgeons and dress the patients for six months. *No fee* is paid by them to the surgeon for this. What a monstrous thing! It is infamous to distribute knowledge so cheap. What a difference between our dressers paying *thirty guineas* to us for a privilege which a Scotchman acquires free gratis for nothing! What *will* become of us if medical reform should take place? That d——d LANCET. On my return I must have a consultation with my colleagues on the subject of the

hospital fees. It is certain we cannot go on long at the old prices. The moment that men can get diplomas without certificates, and are no longer compelled to purchase their knowledge at particular shops and at particular prices, then must our London schools alter their tone, or go to the d——l. That economy and retrenchment system will be our ruin.

"I was surprised to see so many interesting cases in the Infirmary; I thought that there were no surgeons in the world except Londoners who had had any experience. This I find is a cockneyfied notion. I saw a lithotomy case, a hernia case, and a case of aneurysm, and I never saw anything better manufactured than a nose of Liston's making. There are in all six surgeons;—Two operating—Liston and Syme,—two consulting,—and two juniors. They are elected for six years, and serve two years in each of the above capacities. Thus all the members of the College cut and carve in rotation. They say that this is very advantageous for the public, because it prevents the hospital being saddled with bunglers for life. No hole-and-corner work can go on here in a snug way. You can't purchase into the hospital. The surgeons have a poor place of it, for they get no salaries, nor touch the pewter in *any* shape. What would Billy Lawrence say to a surgeoncy *here*? No wonder we detest reformers. I wish they were all at the d——l,—housed safe and sure."

DIAGNOSIS OF A DIMINUTIVE ANEURYSM OF THE AORTA, CLOSE TO THE HEART.

To the Editor of The Lancet.

Sir,—One of the patients alluded to in my letter of the 3rd of November last (Lancet, p. 443) has since died, and upon post-mortem examination, an aneurysm of the aorta was found, close to the heart, not larger than a common hen's egg. There was also hypertrophy and dilatation of the left ventricle. I believe this to be the smallest aneurysm of the aorta of which the existence has been detected during life; at the same time I must observe that, in my opinion, the state of the left ventricle assisted the diagnosis. I remain, Sir, your obedient servant,

A. Billing.

London Hospital, March 3, 1834.

CORONER'S BILL.

To the Editor of The Lancet.

Sir,—Allow me to occupy a small space in your Lancet, for the purpose of calling the attention of the profession to the Coroner's Bill now about to be submitted to Parliament.

The peculiar situation of the medical man places him, with regard to giving evidence, on a different footing from non-medical witnesses. The latter depose as to *facts* of which they have been eye-witnesses; the former is called on to give an opinion founded on his scientific acquirements; and this call is made as often as the coroner's jury find themselves unable to return a verdict in the absence of such testimony. For the sacrifice of the time thus employed, and for the exercise of his talent, the medical man is said to have no legal claim to remuneration. The injustice of this is so glaring, that I believe it only requires to be pointed out to our legislators to obtain the introduction of a clause into the Bill which would afford medical witnesses a legal claim to fair remuneration. As the Coroner exercises his authority in commanding the attendance of witnesses, his order on parochial officers should secure to medical practitioners a sufficient pecuniary recompense for the time which is consumed by their attendance at inquests.

If medical men would promptly use their influence with their parliamentary friends, I trust this measure would be accomplished. I am, Sir, your obedient servant,

F. Bush.

Frome, February 23, 1834.

*** An apology is due to Mr. Bush for the non-insertion of this useful communication in the last Lancet. Unfortunately the note was mislaid. A wish has been expressed, we understand, by many members of Parliament, that Mr. Cripps would withdraw his Bill until the House is placed in possession of the Report of the *Medical Committee*. In the absence of efficient arrangements for the medical functions of the Coroner's court, it is utterly impossible that the Bill can be rendered worthy of the favour of an enlightened legislature.—Ed. L.

DISTRICT DISPENSARIES.

To the Editor of THE LANCET.

SIR,—As you have honoured my letter, though tardily, with a notice, I presume I shall have your permission to invite the co-operation of my medical brethren—fellow sufferers, by the abuse of medical charities.

I entreat them, without delay, to wrest the weapons from the enemy, and to turn them to the profit of themselves. The hint is already taken by a dispensary in the New Road, where the poor are invited to subscribe 5*s.* per year; such subscriber, *without discrimination*, being promised a year's medicine and attendance for themselves and families. This adoption of the principle by a dispensary on the good old plan, ought to rouse to instant vigorous exertion every practitioner not connected with these institutions. Their effects are ruinous to that portion of our profession, who, without fortune, are in the first stage of their career; and men of older practice are not all so prosperous as to sustain the assault with impunity. *This is not a party question*, and it must find honest and able advocates in men of every shade and difference of opinion—those, indeed, excepted, who, having a "vested interest" in such abuses, profit by the spoiling of the general practitioner. I exhort your professional readers to seek each other's assistance, to combine, and thus—and thus only—resist the ruinous inroads upon their honourable prosperity, which "exclusive" cupidity, and a scandalous abuse of public charity, are hourly effecting, and thus redeem a great portion from the poverty under which thousands of Metropolitan practitioners are groaning,—some *literally starving*. Although anonymous, I hope everything from your candour. Give me fair play; I need only this to enable me to confute every argument—even though advanced by yourself—militating against the possibility and advantage of immediate *combination* for the creation of *district* dispensaries. I am yours, &c,

A GENERAL PRACTITIONER.

Feb. 22nd.

*** Without entering into a discussion of this question with our correspondent, whose zeal and talents command our respect, we may take this opportunity of observing, that there are two engines now in operation, the movements of which may either of them render quite unnecessary any exertions of the profession with respect to the institution of public dispensaries. We refer, of course, to the Poor-Law Commission, and to the Medical Committee of the House of Commons.—ED. L.

SCARIFICATORS.

To the Editor of THE LANCET.

SIR,—Owing to some delay in the delivery of the London parcel, I did not receive the No. of THE LANCET in which Mr. Knox's observations appeared in time to answer it earlier than now. My reply shall be brief, as the subject does not allow of any lengthened discussion. Mr. K. observes, that the "operation with the new scarificator is slow and painful, or if done quickly, there is but little control over the length and depth of the incisions." The pain in all operations is proportionate to the degree of quickness with which the operation is performed. To effect the incisions with an unguarded instrument will, of course, cause delay, and in this way add much to the pain. Therefore Mr. Knox has erred in performing his operations with a scarificator, unfurnished with a spring to regulate the depth of the phlemes, which, if rightly fitted, admits of the greatest quickness in the performance of the operation, even to that *passing sensation* so eloquently expressed by Sir Anthony. With respect to the length of the incisions, if a man's eye cannot direct him, having the mark of the cupping-glass to guide him, he is not capable of performing the simplest operation in surgery, and the sooner he quits the profession the better for society. Mr. K. states that long and equable incisions are desirable, and that his attention had been directed to gain such an end for a long period. Such an admission confesses some hidden defect in the common scarificator, which the most dexterous is unable to surmount. The instrument cannot certainly make long nor equable incisions, nor can even Mr. Knox take the quantity of blood by it which a mere tyro would be enabled to get with the new scarificator. If the instrument be correctly made, and the spring strong (a desideratum required, for should it yield, the phlemes might cut too deep), the operation of cupping may be as quickly effected, and as little pain inflicted; as with the common scarificator, with this advantage, that by a single scarificator more blood can be taken than with two or three applications of the one in common use. Mr. Knox has essayed with Dr. Osborn's

polytome, an instrument without a guard, and his operations of necessity have been slow, and in consequence painful; let him amend his error before he again presents himself to the public. He would seem to have entered not very well armed into the field, although he has made a general attack, and dashing about with his unwieldy weapon, has dealt me a blow which I did not deserve. For this I forgive him, as I have received no injury. Until he can prove that the common scarificator may be made to produce long and equable incisions, and that by one application of it as much blood may be taken as by the new scarificator, then will I join him in saying that it is a superior instrument. I am, Sir, your obedient servant,

EDWARD THOMPSON,
M.R.C.S.L., &c.

ELASTIC BANDAGES.

To the Editor of THE LANCET.—Sir, will you allow me to recommend to surgeons the substitution of *Sievier's elastic webbing* for the ordinary calico rollers. In all cases requiring such applications, the elastic web is replete with advantages unattainable by any other material.

It may be a recommendation to such of your readers as take an interest in the genuflexions of the aristocracy, to know that the Duke of Devonshire owes the restoration of the use of his knee to these elastic bandages. The Duke contracted this lameness when imitating the inflexibility of the Chancellor's hams while presenting petitions and addresses to his most gracious Majesty. Your obedient servant,

A SURGEON.

Feb. 22nd.

LONDON HOSPITAL.

POISONING BY OIL OF TAR.

THOMAS WANT, a youth about eighteen years of age, was brought into George's Ward on Saturday at half-past ten p.m., suffering from the effects of oil of tar. It appeared the lad had taken gin, as well as porter, in sufficient quantity to deprive him of sense; while in this state he saw a quart measure containing the former poison (the oil), which but a few minutes previously had been purchased by his master for the purpose of being burned in a lamp. He was aware that the fluid was poisonous, and said, jokingly, to another boy, that he would drink some of it. No attention however was paid to the remark, as he was accustomed to utter bravadoes of the kind among his companions, and he took two or three draughts of the deleterious liquid before his proceeding was noticed.

At the time of admission the boy was insensible; the breathing was difficult, and accompanied by loud mucous rattle; extremities cold; pulse scarcely perceptible; conjunctivæ suffused; pupils very much contracted. The stomach pump was used (under the superintendence of Mr. WILLIAMS the apothecary) without loss of time, and some warm water was injected, which, in a few minutes, was withdrawn. It was strongly impregnated with the oil of tar. A mixture of lime-water and magnesia was next introduced. This compound was also withdrawn after the lapse of a short time, and the patient put to bed. The atmosphere within a short distance of the patient's bed had become extremely unpleasant from the disgusting stench of the oil of tar; it occasioned severe smarting of the eyelids of those persons who were in attendance on the patient. Mustard cataplasms were extensively applied to the extremities, and liquor ammoniæ to the chest. Very slight reaction had taken place after waiting an hour; the feet were warmer; pulse irregular, varying from 90 to 95. He was bled to twelve ounces without manifest improvement; afterwards a stimulating injection of turpentine was administered. On visiting the patient half an hour after the employment of phlebotomy, he was found breathing stertorously and very irregularly; each inspiration was short and quick, and followed by a long laborious expiration. He remained in a comatose state during the greater part of the night; he had a short interval of consciousness at about five a.m., when he asked the nurse for water, and, in answer to a question put by the nurse, he was understood to say that his name was William Frederick. He expired at about half-past nine a.m.

Sectio cadaveris.—The papillæ maximæ very much hypertrophied; *mucous membrane* of the *larynx* and *trachea* highly injected, more especially towards the bronchi; the lungs engorged with blood, and smelt strongly of the oil. The œsophagus was rather paler than natural, as also was the mucous membrane of the stomach. In one portion it was of an orange-yellow colour, studded with brown spots, which remained unchanged by ablution. The contents of the stomach were of a yellow colour, and about a half pint in quantity; the valvulæ conniventes, and mucous membrane throughout the canal, were stained of a light yellow hue, and were,

to all appearance, less vascular than natural. On the convex surface of the liver were observed a few yellowish spots; the gall-bladder was distended with bile; the rest of the abdominal viscera were healthy. The brain presented very slight deviations from natural appearance, with the exception of the arachnoid membrane, which was opaque in several parts.

EXTENSIVE INJURY TO THE PELVIS, WITH DISLOCATION OF THE FEMUR.

Robert Woodward, ætat. 19, sailor, admitted into Richmond's Ward, on Thursday the 14th November, under the care of Mr. ANDREWS, with extensive injury in the right hip and pelvis. It was ascertained that he had returned from sea two or three days previously, and that on the Wednesday night or Thursday morning, the day of admission, he fell from the shaft of a waggon in which he was proceeding to the country on a visit to his relations. He could not give a very precise account of the manner in which the accident happened, being much intoxicated at the time; he had a faint recollection of having fallen while climbing from the shaft into the front of the waggon. The wheel seemed to have passed obliquely over the pelvis on the right side, and the instep of the left foot, which was much lacerated, exposing the tendons of the extensor muscles, as well as the tendons of the peroneus longus et brevis. On carefully examining the hip, the ileum on the right side was discovered to be fractured, or a separation from the sacrum had taken place; the symphysis pubis had also given way. The limb on the fractured side was shortened, with an inclination of the foot inwards, which gave rise to the supposition of a dislocation of the femur on the dorsum ilei. The tumefaction and pain in the gluteal region were considerable, the latter insupportable when the limb was rotated. The head of the femur eluded all research, from the great degree of swelling of the part.

The patient was put to bed immediately, and a soft pillow was placed under the right hip, by which means the body was thrown a little on the left side,—a position most agreeable to the patient. A poultice was applied to the left foot. In the evening he required the introduction of a catheter; and as he continued very restless, an opiate was given.

Nov. 18. The countenance of the patient expresses great suffering; indeed ever since his admission until the present moment he has scarcely had an interval of ease. He is, if possible, more restless than usual; he cannot remain five minutes in any position. The tumefaction in the parts about the hip is increased; fluctuation is distinct. Mr. ANDREWS divided the integuments in the most prominent part, and gave exit to not less than three pints of highly-offensive dark-coloured fluid, mixed with some coagulated blood. The anodyne to be increased according to the urgency of the symptoms.

23. Continues much in the same state. Complains of severe pain in the course of the great sacro-sciatic nerve; pulse very feeble. Ordered beef tea and wine.

24. He expired at half-past two o'clock p. m. The injury to the left foot terminated in mortification; and at the time of his death a line of demarcation was observed there.

Considerable anxiety as to the case was manifested by many of the pupils who had seen and examined the man when admitted, in consequence of there being some difference of opinion as to the precise nature of the accident. The principal point of dispute was, whether or not the inverted direction of the foot, and the shortening of the limb, might not be accounted for by the extensive injury done to the pelvis, which was literally crushed to pieces. The more general opinion, however, was, that the shortened state of the limb and the position of the foot, were more satisfactorily accounted for by supposing that the head of the thigh-bone had suffered displacement, and was lodged on the dorsum ilei.

Post-mortem Examination.—By reflecting the integuments and muscles around the injured parts, an extensive separation of the ileum from the sacrum on the right side was found; the left was partially disunited; the sacrum was fractured transversely about its middle; there was also a separation of the symphysis pubis, which would admit of the finger being interposed. The head of the femur was thrown directly backwards, and lying close upon the ischiatic notch. The pyriformis and obturator muscles were lacerated. Dissection disclosed no trace of injury to bladder, rectum, or urethra. The sciatic nerve was changed in appearance and softened; it appeared to have been pressed upon by the head of the femur.

CORRESPONDENTS.

Mr. W. J. Cooper.—The subjects to which reference is made in the letter of this gentleman, will, without doubt, be fully investigated by the Parliamentary Committee. The chemists and druggists of London, much to their honour, are, it is reported, preparing an address to the House of Commons, in which a prayer is set forth to the effect that

dispensers of medicines may be placed under the control of a body which is qualified to judge of their pretensions, and empowered, by legislative authority, to protect the public from the admission, into that trading branch of medicine, of incompetent manipulattors. When the report of the Medical Committee is received, we shall be happy to attend to any suggestions Mr. Cooper may have to offer.

The case explained under the fictitious names of "*Jones and Thomas*" is a curious one, and involves several points of law which will admit of much discussion, should it ever be submitted to the consideration of a judge and jury. The act of antedating the indentures cannot be charged as an offence against *the apprentice*, who was a minor, and was passive in the transaction; whereas the master was the acting principal. As "Thomas" is in possession of the diploma, and as his right to practise under that diploma has not been set aside by a court of justice, he is not, by practising now, committing any offence under the Act of 1815. In either case, to plead the statute of limitations appears to us to be unnecessary. On an indictment charging the defendant with having procured his examination by fraudulent testimonials, it would seem that the provisions in the 30th clause of the Act may be adduced as a "bar" to the prosecution. The defendant, having passed his examination before the court, cannot be prosecuted by the Company as an *incompetent* practitioner.

The cases forwarded by *Baron Heurteloup* shall appear in our next Number.

A copy of the petition of "Licentiates of the Apothecaries Hall in Ireland, resident in Belfast," addressed to the House of Commons, praying that the House "will not grant" to any medical party in Ireland "new or additional powers, without a full and minute investigation into the merits of their respective demands," has been received.

(*From a Correspondent.*) Preparing for the Press, the entire Works of John Hunter, F.R.S., with Notes by J. F. Palmer, Senior-Surgeon to the St. George's and St. James's Dispensary; assisted by G. G. Babington, Surgeon to St. George's Hospital, Lecturer on Surgery at St. George's Hospital, formerly Surgeon to the Lock Hospital; Thomas Bell, F.R.S., F.L.S., F.G.S., Lecturer on the Teeth, and Lecturer on Comparative Anatomy at St. George's Hospital; Robert Lee, M.D., F.R.S., Physician to the British Lying-in Hospital, Physician to the St. Marylebone Infirmary, and Lecturer on Midwifery; Richard Owen, M.R.C.S., F.Z.S., Assistant Conservator of the Hunterian Museum.

We are requested by a correspondent to ask if there be any London bookseller who is in the habit of sending a parcel weekly to Redruth, in Cornwall.

The *Dumfries Times* of Feb. 26th has reached us,—too late for further notice this week.

***Constant Reader and Admirer.*—As a** licentiate of the Company the party is secure. The right of an individual to practise surgery is not established, or even strengthened, by his possessing the diploma of the College.

***A Young Botanist.*—The dirty work will** be developed. We have known throughout what has been going forward.

***N. H.*—It would be premature to pub-**lish such a scheme *at present*.

After having afforded *Mr. Burke* two pages of our Journal in reply to less than a page and a half of statements made in the report of the Phrenological Society, it is not just that he should impute to us a desire to act unfairly towards him. We promised the insertion of a "sufficient part" of his rejoinder,—a sufficient part, of course, to make the truth apparent. We subsequently recieved the intimation from our reporter contained in No. 340. The truth, we had then reason to believe, was already apparent, and we have only now to say, that if it be the wish of Mr. Burke, we can refer him privately, and in confidence, to a gentleman, whose authority and knowledge he will not be disposed to question, who will give another confirmation of the accuracy of the statements made by our reporter.

"*An Enemy to Puffing,*" is an enemy to one of the first men in Europe. The request of our correspondent in one respect is reasonable. Were there more space in our Journal it would be rendered unnecessary.

***Constant Reader.*—In both instances the** candidate would be admitted to examination, provided the other testimonials were deemed satisfactory by the Court of Examiners.

The letter of *A Student and Assistant* is libellous. Our correspondent had better call at THE LANCET Office.

NOTICE.—It is particularly requested that ALL letters of business forwarded to the Office of THE LANCET,—whether they relate to the contents of the Journal, or refer to transactions connected with the Commission Department,—be INVARIABLY addressed to THE EDITOR—Mr. WAKLEY. If this rule be not observed, it is impossible to guard against the impositions of anonymous scribblers who appear to have no other employment or pleasure than that of subjecting the conductors of journals to a heavy extortion in the shape of post-tax. If all letters of business transmitted to the office be addressed to the Editor, and NO letters, unless so addressed, be received except the postage be paid, impositions will be effectually prevented.

BOOKS RECEIVED.

Medica Sacra; or Short Expositions of the more important Diseases mentioned in the Sacred Writings. By Thomas Shapter, M.D., post 8vo. pp. 191. 7s.

(From the Editors.) The Dublin Jour-nal of Medical and Chemical Science to March 1834. 3s. 6d.

(From the Editors.) The Phrenolo-gical Journal and Miscellany to March 1834. 2s. 6d.

(From the Editors.) The Veterinarian to March 1834. 1s. 6d.

(From the Editor.) The Monthly Ar-chives of the Medical Sciences to March 1834. Edited by Dr. Hunter Lane. 2s. 6d.

The Gardener's Dictionary, Part I. of the 9th edit. By Philip Miller, F.R.S. 1s.

The Magazine of Botany and Garden-ing. Edited by James Rennie, M.A., King's College. Part for Feb. 1834. 1s.

A Series of Anatomical Plates in Litho-graphy, with References and Physiological Comments, illustrating the Structure of the different Parts of the Human Body. Edited by Jones Quain, M.D., University of London. Parts I. to IX. 2s. [These Plates, excellent as they are already, improve as the Work proceeds.—ED. L.]

On Dentition, and some Coincident Disorders. By John Ashburner, M.D. 24mo. pp. 225.

The Animal Kingdom. By Baron Cu-vier. English Edition, issuing in Parts, with Coloured Plates, 1s. Part XIII. to be completed in Four Volumes.